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LATHAM & WATKINS LLP

August 9, 2016

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: ***Business Data Services in an Internet Protocol Environment,*** **WC Docket No. 16-143;** ***Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans,*** **WC Docket No. 15-247;** ***Special Access Rates for Price Cap Local Exchange Carriers,*** **WC Docket No. 05-25**

REDACTED – FOR PUBLIC INSPECTION

Dear Ms. Dortch:

Pursuant to the Protective Orders in the above-captioned proceedings,[1] Comcast Corporation ("Comcast") submits the redacted public version of the attached reply comments via electronic delivery. Comcast will separately submit a Highly Confidential version of this filing via hand delivery. The {{ }} symbols denote Highly Confidential Information.

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1 *In the Matter of Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans*, Order and Protective Orders, WC Docket No. 15-247, DA 15-1387 (rel. Dec. 4, 2015); *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers*, Modified Protective Order, WC Docket No. 05-25, DA 10-2075 (rel. Oct. 28, 2010); *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers*, Second Protective Order, WC Docket No. 05-25, DA 10-2419 (rel. Dec. 27, 2010); *In the Matter of Special Access Rates for Price Cap Local Exchange Carriers*, Order and Data Collection Protective Order, WC Docket No. 05-25, DA 14-1424 (rel. Oct. 1, 2014).

Please contact the undersigned should you have any questions regarding this matter.

Respectfully submitted,

/s/ Matthew T. Murchison

Matthew T. Murchison
of LATHAM & WATKINS LLP
Counsel for Comcast Corporation

Attachments

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans	)	WC Docket No. 15-247
	)	
	)	
Special Access for Price Cap Local Exchange Carriers	)	WC Docket No. 05-25
	)	
	)	
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services	)	RM-10593
	)	

REPLY COMMENTS OF COMCAST CORPORATION

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REPLY COMMENTS OF COMCAST CORPORATION

Comcast Corporation ("Comcast") submits these reply comments in response to the opening comments filed in connection with the Further Notice of Proposed Rulemaking ("FNPRM") in the above-captioned proceedings.[1]

INTRODUCTION AND SUMMARY

The opening comments in this proceeding leave no doubt that subjecting cable BDS providers and other new entrants to rate regulation and similar mandates is unnecessary and unjustifiable, and would be profoundly counterproductive. An array of commenters agree that

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[1] *See Business Data Services in an Internet Protocol Environment; Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans; Special Access for Price Cap Local Exchange Carriers; AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, Tariff Investigation Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 4723 (2016) ("FNPRM" or "*Tariff Investigation Order*").

there is scant justification for ratcheting up regulation of *any* providers in the increasingly competitive BDS marketplace, given the strong record of robust investment, expanding output, and declining prices. The record unequivocally confirms that extending rate regulation and other burdensome mandates to cable providers and other new entrants would be disastrous: It would impede, rather than encourage, further entry, investment, and competition—and it would be unlikely to survive judicial review. Even parties like Level 3 and Public Knowledge, which favor a significant expansion of rate regulation for incumbents, recognize that such measures should apply only to providers with "market power,"[2] and that "it is unnecessary and even potentially harmful to apply *ex ante* rate regulation to competitors without market power," including cable providers.[3]

Further confirmation of the irrationality of subjecting cable providers and other new entrants to rate regulation comes from the Commission itself, not only in the FNRPM's findings that cable providers remain relatively minor players in this marketplace,[4] but also in orders and reports issued since the FNPRM was adopted. Just last month, in an order addressing the ongoing transition from legacy TDM networks to IP-based networks, the Commission reiterated that non-incumbent providers lack "the market power necessary to sustain prices either unreasonably above or below costs," and that "relaxed regulatory treatment of carriers [without

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2 Comments of Level 3 Communications LLC, Birch Communications, Inc., and EarthLink, Inc., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 58-59 (filed Jun. 28, 2016) ("Level 3 *et al.* Comments"); Comments of Public Knowledge, Open Technology Institute at New America, Common Cause, Next Century Cities, Engine, and Schools, Health & Libraries Broadband Coalition, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 5, 8 (filed Jun. 28, 2016) ("Public Knowledge *et al.* Comments").

3 Level 3 *et al.* Comments at 58-59.

4 *See, e.g.,* FNPRM ¶ 218 (noting that, by the end of 2016, cable providers are expected to generate less than eight percent of total BDS revenues).

market power] . . . would reduce barriers to entry and thereby fulfill consumer demand *more efficiently than applying the same regulatory requirements to all carriers*."[5] In making this observation, the Commission cited to the seminal First Report and Order in the *Competitive Common Carrier* proceeding—an analytical framework for regulation that has proven successful for decades and that proponents of expansive regulation now urge the Commission to abandon.[6] That order's key insight—that declining to regulate new entrants produces consumer benefits "more efficiently than applying the same regulatory requirements to all carriers"[7]—rings as true today as it did 36 years ago. And there can be no question that cable BDS providers lack such market power. In addition to the record evidence compiled by cable operators themselves, the report issued by Commission staff on the day that opening comments in this proceeding were due—which finds that the presence of potential cable competition generally does not constrain ILEC pricing power—further undercuts any claim that cable BDS providers *themselves* have market power and should be subject to rate regulation.[8]

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5 *Technology Transitions; USTelecom Petition for Declaratory Ruling That Incumbent Local Exchange Carriers Are Non-Dominant in the Provision of Switched Access Services; Policies and Rules Governing Retirement of Copper Loops by Incumbent Local Exchange Carriers*, GN Docket No. 13-5, WC Docket No. 13-3, RM-11358, Declaratory Ruling, Second Report and Order, and Order on Reconsideration, FCC 16-90, ¶ 10 (rel. Jul. 15, 2016) ("*2016 Technology Transitions Order*") (emphasis added, internal quotation marks and citations omitted)).

6 *See id.* (citing *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, First Report and Order, 85 FCC 2d 1 ¶¶ 16, 56 (1980) ("*First Competitive Common Carrier Report and Order*")).

7 *2016 Technology Transitions Order* ¶ 10 (citing *First Competitive Common Carrier Report and Order* ¶¶ 16, 56).

8 *See* "Competitive Effect of Cable Network Infrastructure," Federal Communications Commission Staff, Jun. 28, 2016, at 1, *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0628/DOC-340040A8.pdf ("Staff Cable BDS Report").

Meanwhile, the few commenters that voice any support for rate-regulating new entrants do so without offering any coherent public policy rationale for such an approach. Their comments fail to recognize that imposing intrusive regulatory mandates on new entrants almost certainly would result in fewer providers entering and competing in the first place. And even if arbitrarily capping competitors' rates would benefit BDS purchasers in the short term, it would distort the market in the long run by depressing new entry and investment. As the attached reply declaration from Dr. Joseph V. Farrell explains, parties favoring rate regulation generally overstate its benefits and understate its costs.[9] Nor can proponents of regulation overcome the absence of legal authority for subjecting private-carrier BDS offerings to rate regulation or other common-carrier mandates.

Finally, the revised analysis from Dr. Rysman (belatedly placed into the record on June 28) provides no support for rate-regulating cable BDS providers and other new entrants. As discussed in the attached reply declaration from Dr. John Mayo,[10] Dr. Rysman's revised analysis suffers from the same flaws as his original analysis—including his continued reliance on outdated 2013 data that do not reflect the substantial growth in BDS competition over the past three years, and the absence of sufficient evidence of market power to justify intrusive rate regulation. As Dr. Mayo explains, all "economic metrics" since 2013 "indicate that market forces are creating more benefits for consumers than ever before," and that "[s]preading price regulation to the very firms that are providing the full measure of competitive stimulus observed

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9 *See* Reply Declaration of Dr. Joseph V. Farrell, ¶¶ 6-17, attached hereto as Exhibit A ("Farrell Reply Decl.").

10 *See* Reply Declaration of Dr. John W. Mayo, ¶¶ 31-57, attached hereto as Exhibit B ("Mayo Reply Decl.").

in this market would, quite simply put, be anti-competitive."[11] The peer reviews solicited by the Commission only confirm these key flaws. Dr. Rysman's revised paper provides no basis whatsoever for rate-regulating competitive BDS providers.

At bottom, the record only bolsters the criticisms that have dogged this proceeding since the FNPRM was released—that the Commission is rushing to judgment based on deeply flawed assumptions and outdated information, that its approach would advance the short-term business interests of a chosen few while causing widespread, long-term harm to competition and consumers, and that the radical proposals to regulate new entrants would upend decades of settled precedent and trample on bedrock economic principles. While Comcast remains convinced that the outcome of this proceeding should be a deregulatory one, the Commission must, at a minimum, proceed in a more deliberate manner that allows for careful and thorough consideration of the impact of any new rules, given the enormity of what is at stake for broadband investment and competition.

DISCUSSION

I. THE RECORD STRONGLY CONFIRMS THAT COMPETITIVE BDS PROVIDERS SHOULD NOT BE SUBJECT TO RATE REGULATION

The substantial majority of parties in this proceeding agree that imposing rate regulation and other mandates on cable BDS providers would be not only unnecessary but also affirmatively harmful to the Commission's goals of promoting BDS competition and investment. The few parties that favor such a radical approach fail to address these significant policy concerns, and they identify no statutory authority to apply common-carrier-style requirements to private carriers lacking market power.

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[11] *Id.* ¶¶ 79-80.

A. Most Commenters Agree That There Is No Sound Rationale for Regulating Competitive Providers and That Doing So Would Be Deeply Counterproductive

A wide array of parties recognize that basic economic principles and established policy considerations warrant a restrained regulatory approach to the BDS marketplace, particularly with respect to cable BDS providers and other new entrants. As Dr. Mayo explained in his report appended to Comcast's opening comments, and as he further demonstrates in his latest report attached to this filing, the BDS marketplace today is more competitive than ever before—substantially more so than the 2013 data cited in the FNPRM suggest—and market forces generally are sufficient to discipline BDS prices.[12] Recognizing this reality, various parties agree that the case for imposing draconian rate caps and other burdensome mandates is weak even with respect to *incumbent* providers in most areas.[13] And as commenters across the spectrum acknowledge, there is no remotely plausible argument for regulating *competitive* BDS providers that lack market power.[14] In particular, and as discussed below, the record makes abundantly

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12 *See* Declaration of Dr. John W. Mayo, ¶¶ 28-45, attached as Exhibit B to Comments of Comcast Corp., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593 (filed Jun. 28, 2016) ("Mayo Decl."); Mayo Reply Decl. ¶¶ 6, 79.

13 *See, e.g.,* Comments of AT&T Inc., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 10-17 (filed Jun. 28, 2016) ("AT&T Comments"); Comments of the National Cable & Telecommunications Association, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 34 (filed Jun. 28, 2016) ("NCTA Comments"); Comments of the Free State Foundation, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 2-3 (filed Jun. 28, 2016) ("FSF Comments"); Comments of the Fiber to the Home Council Americas, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 3 (filed Jun. 28, 2016) ("FTTH Council Comments").

14 *See, e.g.,* Level 3 *et al.* Comments at 3 ("[I]t is unnecessary and even potentially harmful to apply *ex ante* rate regulation to competitors without market power."); Public Knowledge *et al.* Comments at 8 (proposing that the Commission apply rate regulation to multiple providers in a market only insofar as it "finds that multiple providers in a market it deems to be non-competitive have market power"); Comments of Lightower Fiber Networks, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 3 (filed Jun. 28, 2016) (explaining that applying rate regulation to competitive providers would be

clear that imposing rate regulation on such providers (1) is unnecessary, (2) would be profoundly counterproductive to the Commission's goals of promoting competitive entry and investment, and (3) would upset investment-backed reliance interests.

1. The Record Demonstrates That Imposing Rate Regulation and Other Mandates on Competitive BDS Providers Is Unnecessary

The opening comments reflect widespread recognition that there is simply no need to impose rate regulation on competitive BDS providers. To begin with, the record contains ample evidence of the rapid growth of competition in the BDS marketplace—which is driven largely by the significant entry and investment by cable BDS providers across the country, and which belies claims of any market failure that might warrant expanded rate regulation. Charter, for instance, points to its own "significant investment in the BDS market over the past several years" as a "prime example of how—without price regulation—cable providers are already prioritizing network expansion and thereby providing competitive alternatives for business consumers."[15] Charter notes in particular that it has managed to launch certain BDS offerings "at a price significantly below the average price offered by Charter's competitors," and that "it is now able to offer a competitive alternative to incumbent LECs" to a growing number of "multi-site businesses" and other customers.[16] Cox likewise cited its own rapid expansion of "fiber facilities and electronics for delivery of high speed data and voice services to commercial customers," and explained that, as an occasional *customer* of wholesale BDS offerings, "Cox has found numerous alternatives to ILEC-provided services where Cox needs to supplement its own facilities-based

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"counterproductive" and "unnecessary") ("Lightower Comments"); *cf.* Comments of Verizon, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 4 (filed Jun. 28, 2016) ("Verizon Comments") (voicing support for "a process to exempt new entrants from regulation").

15 Comments of Charter Communications, Inc., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 5 (filed Jun. 28, 2016) ("Charter Comments").

16 *Id.* at 5-6.

BDS with another providers' wholesale offering."[17] Smaller cable BDS providers represented by the American Cable Association ("ACA") likewise have "rapidly expanded their BDS offerings in recent years and are continuing to do so," and "face competition virtually everywhere they provide BDS services"—competition that "is, if anything, intensifying."[18] And non-cable competitive alternatives to ILECs, including fiber providers Lightower and Zayo, describe their substantial expansions of service in recent years as a key part of "the competitive solution to the problem perceived by the Commission" in the FNPRM.[19]

AT&T and other ILECs similarly emphasize the critical role that cable providers and others have played in fueling this growing competition. AT&T, for example, explains that "expansion by non-ILEC competitors since 2013 is well documented in the record," and that cable BDS providers have "forced even the largest incumbent LECs to focus on maintaining market share."[20] USTelecom notes that "[t]he competitors making the most inroads are those investing in their own facilities," including, "most notably, cable broadband providers."[21] To be sure, Comcast strongly disagrees with the suggestion by AT&T and USTelecom that cable-provided "best efforts" services should be included in any BDS product market definition the Commission ultimately adopts,[22] given the important differences in price, performance, and customer demand between "best efforts" services and dedicated services provided pursuant to

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17 Comments of Cox Communications, Inc., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 2, 7 (filed Jun. 28, 2016) ("Cox Comments").

18 Comments of American Cable Association, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 26, 37 (filed Jun. 28, 2016) ("ACA Comments").

19 Lightower Comments at 2; *see also* Comments of Zayo Group LLC, 16-143, 15-247, & 05-25 and RM-10593, at 2 (filed Jun. 28, 2016) ("Zayo Comments").

20 AT&T Comments at 14 (internal quotation marks and citations omitted).

21 Comments of USTelecom, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 2 (filed Jun. 28, 2016) ("USTelecom Comments").

22 *See* AT&T Comments at 43-45; USTelecom Comments at 13-15.

service level agreements ("SLAs").[23] Indeed, *every* non-ILEC-affiliated party that weighed in on this issue—including parties that support imposing some degree of rate regulation on the BDS marketplace—concurred with the Commission's proposal *not* to include "best efforts" services in the product market definition for BDS.[24] Nevertheless, AT&T and USTelecom are correct in

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23 *See* Comcast Comments at 11, 30-31 ("Comcast's best-efforts services are priced very differently than dedicated services with SLAs and are not considered competitive substitutes by customers."); *see also* FNPRM ¶¶ 13-14, 190-96 (describing various ways in which BDS is "distinctly different" from best efforts services); *Business Data Services in an Internet Protocol Environment; Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans; Special Access for Price Cap Local Exchange Carriers; AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket Nos. 16-143, 15-247 & 05-25 and RM-10593, Order, DA 16-641, ¶ 10 & n.38 (WCB rel. Jun. 8, 2016) (distinguishing HFC-based best-efforts services from the BDS offerings at issue in this rulemaking).

24 *See, e.g.,* Cox Comments at 16 (agreeing with Commission's proposal to "distinguish[] BDS from best efforts on the former's promises of 'guaranteed' performance"); Comments of INCOMPAS, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 8 (filed Jun. 28, 2016) ("INCOMPAS Comments") (stating that the Commission's market analysis should not count a "provider . . . offering best-efforts services"); Level 3 *et al.* Comments at 37 (explaining that "BDS does not include 'best effort' services" because such services do not offer all of the "prescribed performance requirements" demanded by BDS purchasers, including "bandwidth, reliability, latency, jitter, and/or packet loss" guarantees); Comments of Windstream Services, LLC, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 25 (filed Jun. 28, 2016) ("Windstream Comments") ("The record is clear that best efforts services are not adequate substitutes for business data services[.]"); Declaration of Jonathan B. Baker, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, ¶ 6 (filed Jun. 28, 2016) ("Baker Decl.") (reiterating conclusion in prior papers that "best efforts services are not competitive substitutes for business data services"); Comments of TDS Metrocom, LLC, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 16 (filed Jun. 28, 2016) ("TDS Metrocom Comments") (agreeing that "best efforts services are not in the same product market as BDS"); Comments of Sprint Corp., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 13 (filed Jun. 28, 2016) ("Sprint Comments") ("[T]he Commission correctly concluded [that] best efforts service is not a substitute for BDS."); Verizon Comments at 3 (asserting that, under any rate regulation regime, "no consideration" should be given to "best-efforts services"); Comments of NASUCA and the Maryland People's Counsel, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 16 (filed Jun. 28, 2016) ("NASUCA Comments") ("[B]est effort services cannot be considered BDS because they lack the reliability and symmetry that customers seek when they purchase specialized dedicated circuits."); Mark Cooper, "The Special Problem of

their observation that the BDS marketplace is more competitive today than ever before—even without adding best efforts services into the mix—and that, as a result, "less regulation should be the goal, not more."[25]

Moreover, commenters broadly recognize that, whatever the Commission concludes about the competitiveness of the BDS marketplace overall, it is unnecessary to subject cable BDS providers and other new entrants without market power to rate regulation or related mandates. There is no serious dispute in the record as to the threshold proposition that cable BDS providers lack market power in today's marketplace. As noted above, nearly every commenter agrees that cable providers' best efforts services are not properly viewed as BDS, and *no* commenter makes the case that best efforts services confer *market power* on cable BDS providers. Moreover, the record abounds with evidence that cable providers' Ethernet-over-HFC ("EoHFC") products have only modest competitive significance in today's marketplace. A recent report from Commission staff found that, far from justifying heightened regulatory burdens, "potential cable competition from BDS-comparable HFC infrastructure did not constrain ILEC prices in areas where there was evidence that facilities-based competition was doing so," and that "inclusion of potential cable competition is not necessary to properly model

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Special Access" (Apr. 2016), at 16, Attachment B to Comments of the Consumer Federation of American and New Networks Institute, WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 16 (filed Jun. 28, 2016) ("[T]he best effort (BIAS) service that meets the needs of residential customers does not meet the needs of business customers for secure, high[-]quality[,] high[-]speed Internet connectivity.").

25 USTelecom Comments at iii; *see also* AT&T Comments at 5-6; Mark Israel, Daniel Rubinfeld, and Glenn Woroch, Second White Paper, at 5, attached to AT&T Comments (filed Jun. 28, 2016) ("Second IRW White Paper") ("Even ignoring cable operators' HFC networks, about half of the buildings with BDS demand that are served only by an ILEC were within 88 feet (0.017 miles) of at least one other provider's fiber facilities, 75% were within 456 feet (0.086 miles), and 90% were within about 1,107 feet (0.21 miles), and virtually all (98.7%) were within a half mile.").

these markets."[26] Multiple parties—including proponents of expanded rate regulation—confirm this assessment. Sprint, for instance, observes that "EoHFC has characteristics of both best efforts broadband and low capacity BDS," and that "[b]ecause EoHFC service and speed limitations mean that it can serve as an alternative to BDS services only for some purposes and applications, EoHFC, to the extent it is a BDS substitute at all, is at best only an alternative for the lowest-capacity TDM services (*i.e.*, DS1s)."[27] Windstream similarly explains that data regarding Ethernet-capable HFC nodes should not "meaningfully change the Commission's structural competitive analysis," and that "cable HFC-based Ethernet can never be an alternative for symmetrical services above 50 Mbps."[28]

Moreover, even proponents of expanded rate regulation acknowledge that, because the rationale for *ex ante* rate regulation hinges entirely on protecting customers from a dominant provider's abuse of market power, it necessarily follows that there is no basis for subjecting competitors *without* market power to such regulation or related mandates.[29] For example, Level 3, Birch, and Earthlink (collectively "Level 3") argue that the Commission should impose price cap regulation on TDM and packet-based BDS services offering speeds up to 1 Gbps, but recognize that any such regulation must be limited to "the single leading competitor in a non-competitive market" (which today is clearly the ILEC "in all relevant Business Data Services

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26 Staff Cable BDS Report at 1.

27 Sprint Comments at 13.

28 Windstream Comments at 12, 17.

29 *See* Level 3 *et al.* Comments at 58-60 (noting that "Business Data Services providers without market power have no ability to sustain prices above the level charged by the leading competitor in the market," and that regulation of providers without market power is unwarranted); *see also* Lightower Comments at 5 (noting that regulating the rates of competitive BDS providers that lack market power "would be both unfair to competitive providers and would be arbitrary and capricious").

markets").[30] Windstream likewise proposes that any BDS rate regulation regime should apply only to "market leaders" to prevent them "from 'exercising market power through charging of supracompetitive rates.'"[31] These commenters note that the lack of any need to regulate competitive providers without market power is a function of basic economics. As Level 3 points out, "providers without market power have no ability to sustain prices above the level charged by the leading competitor in the market," and "if the leading competitor is subject to *ex ante* rate regulation, other competitors in the relevant market would likely be forced to charge prices that are no higher than the regulated prices charged by the regulated competitor."[32]

Even Public Knowledge, which otherwise favors additional BDS rate regulation, recognizes that such measures need only apply to "providers that can exercise market power."[33] Public Knowledge makes clear its view that, "[c]onsistent with longstanding antitrust principles,"[34] the Commission should apply rate regulation to multiple providers in a non-competitive market only insofar as it "finds that multiple providers in a market it deems to be non-competitive have market power."[35] Other public advocacy groups similarly highlight the rise in BDS competition in recent years and the fact that market forces—not prescriptive mandates—represent the best mechanism for keeping rates low and fostering further

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30 Level 3 *et al.* Comments at 58-59.

31 Windstream Comments at 54 (quoting FNPRM ¶ 420).

32 Level 3 *et al.* Comments at 59; *see also, e.g.,* Lightower Comments at 5 ("Regulation of CFPs in non-competitive markets is unnecessary because the ILEC is present in all or virtually all non-competitive markets and if the ILEC's rates are regulated, CFPs will be unable to exploit any supposed market power to force customers to pay for service at prices higher than the ILEC's rates.").

33 Public Knowledge *et al.* Comments at 5.

34 *Id.*

35 *Id.* at 8.

competition, and that regulating providers without market power would be particularly unjustified.[36]

2. *The Record Also Demonstrates That It Would Be Counterproductive To Subject Competitive BDS Providers to Rate Regulation and Other Mandates*

Various parties also detail how the imposition of across-the-board rate regulation would be profoundly harmful to the BDS marketplace, as it would inevitably deter future entry and diminish competition. For example, Lightower explains that "[t]he proposed rate regulation regime, if applied to [competitive fiber providers], would create a level of uncertainty, cost, and administrative burden that would be enormously disruptive," and that even "[i]n the best case, the result would be a substantial reduction in capital spending and a concomitant reduction in competition."[37] Likewise, as Charter notes, "[p]rice-regulating the BDS market—even just in geographic areas deemed 'non-competitive'—would throw a very negative variable into Charter's consideration of whether continuing to provide BDS over HFC makes economic sense."[38] For Cox, the rate-regulation measures proposed in the FNPRM "could reduce [its] revenue to the point where construction would no longer be viable on some projects," and "could have a particularly adverse impact on Cox's willingness and ability to bid on E-rate contracts."[39] And ACA points out that, for smaller cable BDS providers serving "higher-cost or greater-risk locations," the imposition of rate regulation would make further buildout "uneconomical."[40]

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36 *See, e.g.,* FTTH Council Comments at 2-3; FSF Comments at 1-2.

37 Lightower Comments at 2-3.

38 Charter Comments at 9-10.

39 Cox Comments at 21-22.

40 ACA Comments at 39-40.

Indeed, parties expressing strong support for rate regulation in the BDS marketplace recognize that it would be counterproductive to subject competitive providers to such regulation (whether directly or through a benchmarking regime). Notably, Level 3 explains that rate regulation must be limited to a single provider with market power in a particular area because it would be "affirmatively harmful" to "apply *ex ante* rate regulation to competitors without market power."[41] As Level 3 explains, the needless compliance costs and the risk that rates pegged to the incumbent LEC's costs would often "cause the non-dominant competitor to charge prices that are below its costs," thus "forcing the non-leading competitor to withdraw from the market."[42]

Level 3's recognition of the harms of applying rate regulation to providers *other than* "the single leading competitor in a non-competitive market"[43] is particularly noteworthy given how overbroad Level 3's proposed rate-regulation approach is in other respects. For instance, under Level 3's proposal, all BDS under 100 Mbps unjustifiably would be deemed non-competitive, and services between 100 Mbps and 1 Gbps would be deemed "competitive" only in census blocks "in which four or more carriers have each deployed a connection."[44] As discussed further below, these proposals are particularly extreme and unsupportable, and by overregulating incumbent providers directly, such measures likely would *indirectly* force down

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41 Level 3 *et al.* Comments at 58-59.

42 *Id.* at 59-60; *see also, e.g.,* Lightower Comments at 5 ("[R]egulation of CFP rates would be counterproductive because CFPs are a key part of the solution to the problems that the Commission seeks to remedy, and imposing the type of regulation contemplated in the Business Data Services FNPRM would reduce, rather than increase, the very competition that the Commission is seeking to encourage.").

43 Level 3 *et al.* Comments at 58.

44 *Id.* at 9.

many competitive providers' rates to unsustainable levels.[45] And yet, for all the excessiveness of Level 3's broader rate regulation proposals, Level 3 understands that competitive BDS providers that lack market power should not be rate-regulated *in any market*[46]—a powerful confirmation of how radical and harmful it would be for the Commission to pursue a contrary approach here.

3. The Record Further Establishes That Imposing Rate Regulation on Competitive BDS Providers Would Upset Investment-Backed Expectations

The opening comments also confirm that subjecting cable BDS providers and other new entrants to rate regulation for the first time would run roughshod over "serious reliance interests that must be taken into account" by the Commission.[47] Comcast has invested "hundreds of millions of dollars in new fiber transmission facilities (and associated network equipment) to support the robust and reliable data services that larger businesses and carrier-customers demand,"[48] and did so in reliance on its status as a "new entrant" that has never been "subject to rate regulation."[49] Charter points to its own "significant investment in the BDS market" of "{{ }} annually" since 2013[50]—explaining that this investment occurred "in the absence of any price regulation," and that "it is precisely this procompetitive environment that has allowed cable operators the flexibility and confidence to make the significant investments necessary to create the 'great entry success story' the FNPRM recognized.[51] Cox likewise has "invested more than {{ }}" over the past decade in fiber facilities and electronics

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45 *See infra* Section I.C.

46 *See* Level 3 *et al.* Comments at 58-60.

47 *Perez v. Mortgage Bankers Ass'n*, 135 S. Ct. 1199, 1209 (2015); *see also FCC v. Fox Television Stations*, 556 U.S. 502, 515 (2009) (same).

48 Comcast Comments at 8.

49 Declaration of Devesh Raj ¶ 10, attached as Exhibit F to Comcast Comments.

50 Charter Comments at 5.

51 *Id.* at 3 (citing FNPRM ¶ 236).

supporting its BDS offerings, under the assumption that it would not be "subject to rate regulation" for such services.[52]

ACA similarly notes that the smaller cable BDS providers it represents have been "spending at least many tens of millions and upwards of $300 million annually to deploy facilities to support the provision of BDS" in the absence of price regulation.[53] And non-cable providers have made correspondingly substantial investments in BDS in reliance on the Commission's longstanding policy of avoiding rate regulation for providers lacking market power. For instance, Zayo notes that, "in the March 2014 through December 2015 quarters, [it] committed to invest an estimated $740 million in eleven Major Network Expansions," which support "services [that] enable customers to manage, operate and scale their telecommunications and data networks to enhance their fiber density and expand their fiber footprint."[54]

The sudden imposition of rate regulation on the competitive services supported by these massive investments is going to significantly reduce the expected return on these investments. Indeed, as noted above, the record indicates that imposing rate regulation would reduce revenues so substantially that many of these buildouts *would not have occurred* if rate regulation had applied in the first place.[55] The shock to the marketplace would be particularly pronounced given that the Commission's policy of *not* regulating competitive providers is so longstanding and well-reasoned. The severe impact on competitive BDS providers' investment-backed

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52 Cox Comments at 7.

53 ACA Comments at 29.

54 Zayo Comments at 2.

55 *See supra* at Section I.A.3.

reliance interests thus provides yet another reason why subjecting these providers to rate regulation and other mandates would be unwise—and indeed illegal, as discussed below.[56]

B. The Few Parties That Affirmatively Support Regulating Competitive Providers' BDS Offerings Fail To Articulate Any Coherent Rationale for Doing So

In contrast to the broad consensus among parties who recognize that it would be irrational and counterproductive to regulate cable BDS providers and other new entrants, a handful of commenters nevertheless suggest (albeit in vague terms) that the Commission do exactly that. Verizon and INCOMPAS claim to support measures that would encourage BDS competition and investment, but their proposals would have precisely the opposite effect. In their June 27 joint *ex parte* letter, Verizon and INCOMPAS acknowledge that "competition is the best way to ensure customers benefit" and assert that the Commission should "develop an administratively simple and pro-competitive framework" that would "encourage new facilities-based market entry" while not "discourag[ing] new entrants from entering markets and building facilities to compete with existing providers."[57] They echo these assertions in their comments, with Verizon urging the Commission to adopt rules that would "promote investment and foster market entry by facilities-based providers,"[58] and INCOMPAS citing the need to "encourag[e] new entry, innovation and, where economically feasible, network deployment."[59] But these platitudes are not backed up by proposals that would do anything to support these principles. In particular, their call for "*ex ante*

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56 *See infra* Section I.D.

57 Letter of Kathleen Grillo, Verizon, and Chip Pickering, INCOMPAS, to Marlene Dortch, FCC, WC Docket Nos. 16-143 & 05-25, at 1-3 (filed Jun. 27, 2016) ("VZ/INCOMPAS June 27 Ex Parte").

58 Verizon Comments at 1.

59 INCOMPAS Comments at 5.

price regulation for all Business Data Services" in markets deemed to be non-competitive[60]—which would subject new entrants to burdensome rate regulation historically reserved for entrenched providers with market power—would directly undermine the Commission's goals of promoting competitive entry and investment, as Drs. Mayo and Farrell explain in their declarations,[61] and as most other commenters recognize.

In fact, the Verizon/INCOMPAS proposal to rate-regulate providers without market power is so contrary to common sense and would be so counterproductive that even Level 3—together with other leading members of INCOMPAS—opposes it.[62] More telling, Verizon and INCOMPAS have consistently taken positions elsewhere that conflict with their proposals here.[63] Verizon in particular told the Commission just last year that the marketplace is "robustly competitive,"[64] that "[e]xisting regulations combined with market forces will ensure continued

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60 VZ/INCOMPAS June 27 Ex Parte at 2.

61 *See* Mayo Decl. ¶¶ 81-84 (explaining that "[t]here is simply no support within the body of economic research for imposing price cap regulation on an entire market of competitors, including new entrants that, under any conceivable interpretation, do not enjoy monopoly power," and that "history is replete with the economic harm caused by market-wide price controls"); Farrell Decl. ¶¶ 94, 99 (explaining that imposing rate regulation on potential new entrants would negatively "affect [providers'] entry decisions" pull new entrants back from the "cusp" of entering many markets).

62 *See supra* at 14-15.

63 *See, e.g.,* Consolidated Applications To Transfer Control of Domestic and International Section 214 Authorizations, WC Docket No. 16-70, Exhibit 1 at 14 (filed Mar. 4, 2016) (asserting that the BDS marketplace presents no need for particular regulatory concern, as "a wide range of providers and new entrants have deployed facilities and are investing further to meet demand and thus competition should continue to intensify"); Letter of Angie Kronenberg, INCOMPAS, to Marlene Dortch, FCC, WC Docket No. 16-70, at 2 (filed Jul. 6, 2016) (arguing that Verizon should be singled out for regulation in the BDS context because it "has market power in its region," and asserting that "the presence of nearby cable and/or competitive LEC facilities" should not be a significant factor in the Commission's analysis).

64 Letter of Maggie McCready, Verizon, to Marlene Dortch, FCC, WC Docket No. 05-25 and RM-10593, at 1 (filed Feb. 5, 2015).

access" to competitively priced BDS offerings,[65] and that "[a]dditional regulatory intervention is *not needed*."[66] Verizon also has sharply criticized calls for forced network sharing in the BDS context as "extraordinary proposals" that would allow others "to reap the benefits of investments for which they did not assume any risks," and that would be unjustifiable given "evidence of broadly available business broadband services (both in terms of the geographic scope of next generation networks and the range of service offerings) and new investment." [67] Verizon's about-face in calling for expanded (and unprecedented) regulatory intervention in the BDS marketplace should be given no weight at all.

Indeed, elsewhere in its comments in this proceeding, Verizon is forced to concede—despite its calls to regulate "all" BDS providers—that there should be "a process to exempt new entrants from regulation."[68] But the so-called "exemption" Verizon proposes—a rule that no BDS provider "could be subject to a rate challenge within some period after entering a particular geographic market"[69]—is exceedingly vague and does not meaningfully address concerns over the harmful effects of rate-regulating providers that lack market power. BDS providers would remain extremely wary of entering new markets if the exemption from rate regulation were only short-lived, and for any providers that do enter, their ability to compete with incumbents would be dramatically impaired once the temporary exemption is lifted. Verizon's "new entrant"

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65 Reply Comments of Verizon, WC Docket No. 05-25, PS Docket No. 14-174, GN Docket No. 13-5, at 7 (filed Mar. 9, 2015).

66 *Id.* (emphasis added).

67 Reply Comments of Verizon and Verizon Wireless, WC Docket No. 10-188, at 1-2 (filed Nov. 4, 2010).

68 Verizon Comments at 4.

69 *Id.* at 20.

exemption pays nothing more than lip service to the substantial harms presented by its aggressive rate regulation proposals.

Verizon's related proposal to require competitive providers to justify prices that exceed a "benchmark" or "safe harbor" threshold tied to ILECs' rates[70] ignores the reality that the incumbent provider's prices necessarily discipline competitors' prices.[71] A safe harbor that forces rates down by some arbitrary amount, subjects competitors to rate complaints, and requires them to affirmatively justify the reasonableness of any above-benchmark rates still would be enormously burdensome and would deter entry and inhibit competition just as a more prescriptive rate cap would. Such an approach also would present many of the same logistical challenges as would the direct application of price caps. Providers subject to benchmarking would face the burden of having to track the benchmark for every single geographic market—a challenge that would be particularly significant if markets were defined at a granular level, such as census blocks. Indeed, if the Commission were to adopt a framework that uses census blocks or other geographic markets that are significantly smaller than those traditionally used in the special access context, this problem would be far worse for competitive providers than it has been for decades for the incumbents. Moreover, as Comcast has explained, a competitive provider seeking to serve multi-location or multi-product customers would be confronted with the prospect of devising an arrangement that accounts for a patchwork of benchmarking

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70 *See id.* at 4; *see also* Letter of Maggie McCready, Verizon, to Marlene Dortch, FCC, WC Docket Nos. 16-143 & 05-25, RM-10593, at 1-2 (filed Aug. 5, 2016).

71 *See* Level 3 *et al.* Comments at 59 (noting that, "if the leading competitor is subject to *ex ante* rate regulation, other competitors in the relevant market would likely be forced to charge prices that are no higher than the regulated prices charged by the regulated competitor").

obligations across the geographic markets it serves.[72] These customers, for their part, would find it difficult to reconcile the various rates on RFPs and invoices that benchmarking would force competitive providers to charge for the same product in different locations.[73] And these compliance burdens would only compound existing impediments to deploying facilities and providing service in competition with incumbents, including the additional costs and delays that competitors often confront in obtaining access to office buildings and other customer locations (costs that incumbent LECs generally do not face), and the inherent cost disadvantage faced by competitors that must build new facilities to locations already served via fiber by incumbent LECs.[74]

Sprint similarly calls for artificially tethering competitive BDS providers' Ethernet prices to ILECs' TDM prices through a "safe harbor" mechanism, but it simply assumes the validity of such an approach without articulating any appropriate policy basis.[75] Indeed, Sprint's calls for regulating competitive providers are undermined by its own economic declarations. Those declarations—like Professor Rysman's revised white paper and Professor Jonathan Baker's declaration on behalf of Level 3 and Windstream[76]—seek to justify rate regulation (to the extent they address that issue at all) based on the argument that *ILECs* possess market power as a result

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72 *See* Comcast Comments at 55.

73 *See id.*

74 *See id.* at 24.

75 *See* Sprint Comments at 64-66.

76 *See* Marc Rysman, "Empirics of Business Data Services," Revised White Paper, at 3 (Jun. 2016), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0628/DOC-340040A6.pdf ("Revised Rysman White Paper") (noting that his "paper studies what are arguably three different data sets covering revenue, locations and prices," and asserting that he "find[s] evidence of ILEC market power in each"); Baker Decl. ¶ 2 (summarizing "conclusion that incumbent local exchange carrier (ILEC) prices for business data services exceed competitive levels, reflecting the exercise of market power").

of insufficient competition in some market segments.[77] Yet no economist so much as considered, let alone argued, that new entrants such as Comcast possess market power justifying the imposition of price regulation—and as discussed at length above, no plausible economic case *could* be made for such an approach.

Sprint's economic declarations also fail to grapple with the enormous costs that imposing rate regulation on competitive providers would entail, and make no effort to weigh those costs against the purported benefits of Sprint's preferred regulatory approach. For example, Sprint endorses a four-competitor threshold for deeming a market competitive.[78] This proposal is inherently problematic, as the Commission has long recognized that price caps in this arena are warranted only where a carrier "has substantial opportunity and incentive" to charge unreasonably excessive rates based on its "monopoly or near-monopoly" position[79]—and not

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77 *See* Kwoka Decl. ¶ 46 (addressing the effects of competition on "the prices charged by the major ILECs"); *see also* Declaration of William Zarakas and Jeremy Verlinda ¶ 4, attached as Attachment D to Sprint Comments (filed Jun. 28, 2016) (explaining that their study examined only ILECs' provision of high-bandwidth services).

78 Sprint Comments at 4; *see also supra* at 14 (discussing Level 3's four-competitor proposal). With respect to its proposed merger with T-Mobile, Sprint previously argued that a three-competitor wireless marketplace would be competitive. *See, e.g.*, Jon Brodkin, "Sprint Owner Vows 'Massive Price War' If It Can Buy T-Mobile," Mar. 11, 2014, *available at* http://arstechnica.com/business/2014/03/sprint-owner-vows-massive-price-war-if-it-can-buy-t-mobile/ (quoting SoftBank CEO Masayoshi Son as stating that a three-competitor market would result in aggressive "price competition" and "network competition"); *see also* Mark Hawver, "Sprint Chief: Merger Will Be a Win-Win All Around," Jun. 27, 2014, *available at* http://www.techtimes.com/articles/9344/20140627/sprint-chief-merger-will-be-win-win-all-around.htm (quoting former Sprint CEO Dan Hesse as stating that "the U.S. wireless industry would be healthier and consumers would be better off with three strong competitors").

79 *First Competitive Common Carrier Report and Order* ¶ 15; *see also 2016 Technology Transitions Order* ¶ 10 (reiterating that non-dominant carriers lack "the market power necessary to sustain prices either unreasonably above or below costs," and that "relaxed regulatory treatment of carriers [without market power] . . . would reduce barriers to

where a carrier faces competition that the Commission simply considers insufficiently robust. There is no basis whatsoever for an across-the-board conclusion that BDS markets with two or three competitors *always* contain a provider with "monopoly or near-monopoly" power. In fact, the declarations filed by Sprint's in-house and external economists only confirm that adding a third or fourth provider *has relatively little incremental effect on prices*.[80] None of Sprint's economists makes any effort to show that this marginal benefit offsets the substantial costs of applying rate regulation broadly to all providers in all census blocks with fewer than four BDS competitors. Indeed, the costs of such an approach would vastly outweigh these marginal benefits, as the attached declaration of Dr. Farrell explains.[81] Dr. Farrell points out that "[n]either Professor Rysman's study nor the FNPRM even *attempts* to address or justify the giant leap from finding that the presence of more BDS competitors is correlated with better outcomes

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entry and thereby fulfill consumer demand more efficiently than applying the same regulatory requirements to all carriers" (internal quotation marks and citations omitted)).

80 *See* Declaration of John Kwoka ¶ 39, attached as Exhibit A to Sprint Comments (filed Jun. 28, 2016) (reporting that, in Sprint's experience, the presence of a second bidder reduced the price by {{ }}, whereas the presence of the third and fourth bidder reduced the price only by {{ }} and {{ }} respectively); Declaration of Chris Frentrup ¶ 10, attached as Exhibit B to Sprint Comments (filed Jun. 28, 2016) (reporting the same regression results as Dr. Kwoka); *see also* Second IRW White Paper at 40 ("As a matter of economics, the first competitor would have the largest competitive impact, with additional competitors having only a diminishing incremental effect."). Accordingly, AT&T's proposed two-competitor threshold would strike a far more rational balance between the costs and benefits of rate regulation. *See* AT&T Comments at 50-52.

81 *See* Farrell Decl. §§ VI, VII, VIII; Farrell Reply Decl. ¶¶ 6-17, 99-100; *see also* Dr. Andrew Sweeting, "Review of Dr. Rysman's 'Empirics of Business Data Services' White Paper," Apr. 26, 2016, at 10, *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0628/DOC-340040A4.pdf ("Sweeting Peer Review") (suggesting that "market power may be too limited to rationalize regulation").

for customers—even if that finding were solid—to concluding that the Commission should regulate prices that it diagnoses as imperfectly competitive."[82]

The Mid-Sized ILECs, for their part, argue that any price regulation or other mandates must apply equally to all BDS providers,[83] but their plea for "competitive neutrality" ignores that, for decades, the Commission has distinguished between incumbent providers with market power and new entrants that lack such power. The Commission noted over 30 years ago that "it would defy logic . . . to regulate in an identical manner carriers who differ greatly in terms of their economic resources and market strength," and it has "often taken this fundamental incongruity into account in fashioning its regulations and reaching its decisions."[84] Indeed, the Commission reiterated just last month that maintaining a regulatory distinction between incumbent providers with market power and new entrants without market power helps "reduce barriers to entry and thereby fulfill consumer demand more efficiently than applying the same regulatory requirements to all carriers."[85] Thus, as discussed above, it makes all the sense in the world to refrain from subjecting cable BDS providers to any rate regulation that would apply to incumbent providers deemed to have market power—as the record confirms that cable providers

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82 Farrell Reply Decl. ¶ 17 (emphasis added).

83 *See* Joint Comments of CenturyLink, Inc., Consolidated Communications, FairPoint Communications, Inc., and Frontier Communications Corp., WC Docket Nos. 16-143, 15-247, & 05-25 and RM-10593, at 66-69 (filed Jun. 28, 2016) ("Mid-Sized ILECs Comments").

84 *First Competitive Common Carrier Report and Order* ¶ 34; *see also* Comcast Comments at 44-49 (detailing how the Commission has accounted for differences between providers with market power and providers without market power in various contexts).

85 *2016 Technology Transitions Order* ¶ 10.

currently lack such market power and that cable HFC networks will play a very minor role in the BDS arena going forward, including in particular with respect to 5G backhaul.[86]

Also unavailing is the Mid-Sized ILECs' assertion that any "differentiation among providers" would be "unlawful."[87] The Administrative Procedure Act ("APA") requires equal treatment of providers only when they are "similarly situated."[88] The D.C. Circuit has explained that, while courts "have long held that an agency must provide adequate explanation before it treats similarly situated parties differently, . . . the converse is also true."[89] Thus, under the APA, "[a]n agency must justify its failure to take account of circumstances that appear to warrant different treatment for different parties."[90] As explained above, the Mid-Sized ILECs offer no such justification. Here, where new entrants that lack market power plainly are *differently* situated, differential regulation is not only appropriate but legally required.

C. Proposals by CLECs and Others To Regulate Market Leaders in the Vast Majority of Markets Are Dramatically Overbroad

Although most CLEC commenters appropriately acknowledge that rate regulation must be limited to "the single leading competitor in a non-competitive market,"[91] their proposals to regulate such market leaders (at this point, incumbent LECs) in virtually *every* market in the country would be counterproductive and harmful to the broader marketplace. In particular, Level 3 proposes that *all* BDS under 100 Mbps should be deemed non-competitive, and that

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86 *See supra* at 10-11; *see also, e.g.,* Comcast Comments at 26-40; NCTA Comments at 66-69; Cox Comments at 18-19.

87 Mid-Sized ILECs Comments at 67.

88 *See Comcast Corp. v. FCC*, 526 F.3d 763, 769 (D.C. Cir. 2008) ("[A]n agency must provide an adequate explanation to justify treating similarly situated parties differently." (citations omitted)).

89 *Petroleum Communications, Inc. v. FCC*, 22 F.3d 1164, 1172 (D.C. Cir. 1994).

90 *Id.*

91 Level 3 *et al.* Comments at 58-59; *see also supra* at Section I.A.1.

services between 100 Mbps and 1 Gbps should be deemed "competitive" only in census blocks "in which four or more carriers have each deployed a connection."[92] Similarly, INCOMPAS (joined by Verizon) breezily asserts that "*all* Business Data Services" at or below "50 Mbps" should "be deemed non-competitive *in all census blocks*."[93] But these parties point to no evidence whatsoever supporting such a blanket conclusion. To the contrary, they ignore record evidence demonstrating that many local markets have vigorous competition for services at or below 50 Mbps (and, *a fortiori*, at or below 100 Mbps).[94] And even if a presumption of some type were warranted regarding competition for such services, at the very least it would have to be rebuttable (rather than conclusive) to avoid results at odds with market realities.

Such proposals also would irrationally discount *potential* competition, including BDS providers in adjacent areas whose network configuration and capabilities would enable them to deploy new services in the relevant market quickly and economically.[95] Such an approach—which Level 3 concedes would subject virtually every census block in the country to rate

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92 *Id.* at 9.

93 VZ/INCOMPAS June 27 Ex Parte at 2 (emphasis added); *see also* Verizon Comments at 3; INCOMPAS Comments at 6.

94 *See, e.g.*, Second IRW White Paper at 2, 29-30 (finding that, even when considering only 2013 data and excluding UNE-based competition, "about 80% of even sub-50 Mbps bandwidth was within 1,000 feet of competitive fiber," that "more than 90% of the buildings where ILECs have sub-50 Mbps connections are within 2,000 feet of at least one other provider's network," and that "more than 90% of ILEC sub-50 Mbps demand (*i.e.*, bandwidth) is located in buildings with at least one other provider within 2,000 feet").

95 *See, e.g.,* Second IRW White Paper at 22 ("[C]ompetitors deploy networks in areas with BDS demand, compete for customers in those areas (typically within about a half mile of their networks), and then connect to the buildings where they win customers. This means that competition occurs not only in buildings where competitors have already deployed connections, but also in buildings within about a half mile of their networks.").

regulation for services up to 1 Gbps[96]—would cause significant harm by undercutting facilities-based competition. Level 3, INCOMPAS, Sprint, and other proponents of ubiquitous regulation utterly fail to grapple with the fact that the costs of broadly imposing rate regulation in this marketplace—costs that Level 3 acknowledges elsewhere in its comments[97]—would outweigh whatever benefits they expect a four-competitor threshold would bring.[98]

These commenters also unjustifiably dismiss the relevance of UNE-based competition out of hand. INCOMPAS and Verizon, for example, assert that only "facilities-based providers" should count in the Commission's competitive market test (while clumsily admitting that they "have not agreed on what constitutes such a provider").[99] While Comcast agrees that facilities-based competition should be the Commission's primary goal and should be given the most weight, the notion that UNE-based competition has no relevance at all has no economic basis, given that UNE-based competitors undoubtedly compete with facilities-based providers on the basis of price (*i.e.*, by attempting to reduce costs and/or accepting lower margins). And INCOMPAS inexplicably fails to square its newfound view that UNE-based competition delivers *no benefits* to customers with its own (and its members') longstanding, ardent promotion of unbundling obligations.[100] Given that the Commission itself has sought to stoke UNE-based

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96 *See id.* at 40.

97 *See* Level 3 *et al.* Comments at 59-60.

98 *See supra* at 22-23.

99 VZ/INCOMPAS June 27 Ex Parte at 2; *see also* Verizon Comments at 3; INCOMPAS Comments at 8.

100 *See, e.g.,* Comments of COMPTEL, WC Docket No. 14-9, at 8 & n.20 (filed Jul. 7, 2014) (noting "the significant extent of competition in the business market that comes from traditional competitors that rely on the competitive provisions of the Act in order to provide business consumers the competitive services they need," and pointing in particular to the use of "Unbundled Network Elements ('UNEs') to provide enterprise broadband services" (internal citations and quotation marks omitted)).

competition as an important "check on special access pricing,"[101] it would be irrational for the Commission now to exclude UNE-based competition from its competitive analysis of the BDS marketplace.

While Comcast agrees with Level 3's proposal that the Commission should subject only the market leader in a non-competitive market to *direct* price regulation, the undeniable reality is that such an approach would *indirectly* force down the rates for all other providers in those markets, as competitive providers' rates necessarily are disciplined by the leading provider's rates. Thus, expanding price cap regulation to virtually every market in the country—even if directly applicable only to the "market leader" in those markets—would artificially depress competitors' prices nationwide, thus substantially impairing entry incentives and investment.

To be sure, the indirect effects of any regulation limited to dominant providers likely would be *less* harmful than the direct imposition of rate regulation on competitive providers (*e.g.*, in the form of a presumptive price ceiling for Ethernet services based on a benchmark derived from TDM rates).[102] Direct rate regulation, coupled with the threat of complaints challenging the regulated provider's rates as "unreasonable," would generate a more cautious posture among business decisionmakers, given the uncertainty about the outcome of such complaint proceedings and the potential reputational harm of being accused of violating Commission rules. Defending against such complaints also imposes costs of its own, and direct regulation generally causes greater concern among investors and lenders than the indirect effects of regulation, thus threatening to raise the cost of capital for entities exposed to direct rate

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101 *Unbundled Access to Network Elements, Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Order on Remand, 20 FCC Rcd 2533 ¶ 65 (2005).

102 *See* Farrell Reply Decl. ¶ 13.

regulation.[103] But Level 3's and other CLECs' failure to account even for the lesser (though still significant) harms to competition caused by overbroad regulation of incumbents represents a serious flaw in their proposed framework.

D. No Proponent of Regulating BDS Prices Identifies Appropriate Legal Authority for Subjecting Cable Providers' Offerings to Rate Regulation

Even apart from the significant policy concerns presented by proposals to rate-regulate new entrants, the record contains no cogent theory for why pursuing such proposals would be appropriate as a legal matter. Proponents of rate regulation offer nothing to rebut the substantial record evidence that many cable BDS offerings are private carrier services that are not subject to common carrier duties under Title II, nor do they provide any justification for compelling cable BDS providers to offer such services on a common carrier basis. The record also confirms that such proposals would be arbitrary and capricious under the APA.

1. Proponents of Rate Regulation Identify No Legal Basis for Subjecting Cable Providers' Private Carrier Offerings to Common Carrier Mandates

Parties that favor regulation of competitive providers fail to identify appropriate legal authority to impose price caps and other common carrier mandates on new entrants' private carrier services. They simply *assert*, without meaningful analysis, that competitive BDS providers are common carriers subject to Section 201.[104] But they make no effort to introduce

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103 *See, e.g.*, Morgan Stanley, "Telecom Services: Resetting Ratings & PTs on Lower Rates and Higher Capex Outlook," Jul. 18, 2016, at 9-10 (downgrading the credit rating of CenturyLink and Frontier based on the conclusion that they have "above average exposure" to the prospect of direct rate regulation in the BDS context).

104 *See, e.g.,* Verizon Comments at 18 (asserting without explanation that "cable operators" have "common carrier duties" in the BDS context); INCOMPAS Comments at 12 (stating without analysis that "Business Data Services are telecommunications services and therefore providers of Business Data Services are common carriers"); Letter of Curtis L. Groves, Verizon, to Marlene Dortch, FCC, WC Docket Nos. 16-143 & 05-25, RM-10593, at 1-2 (filed Aug. 5, 2016) ("Verizon August 5 Ex Parte") (asserting without

any evidence into the record to support this remarkable proposition. Nor could they. As explained in its opening comments, Comcast (like various other competitive BDS providers) offers many of the key services at issue—including in particular cell backhaul and E-Access transport services—on a private carrier basis.[105] Comcast chooses its customers for these services on an individual basis and provides service subject to individualized arrangements, without any indiscriminate "holding out" to the public. Absent such an indiscriminate "holding out," the central rationale for common carrier treatment—the notion that the carrier "ha[s] implicitly accepted a sort of public trust by availing themselves of the business of the public at large"—vanishes, as does the legal authority for common carrier regulation.[106]

Among the commenters favoring rate regulation for cable BDS providers, Sprint comes closest to articulating something resembling a legal argument that cable BDS offerings are common carrier services.[107] Sprint notes that under the Communications Act, a provider of telecommunications is subject to regulation as a common carrier "'to the extent that it is engaged in providing *telecommunications services*.'"[108] But Sprint then leaps to the unsupportable conclusion that "[b]ecause BDS amounts to 'telecommunications,'" all BDS providers "are common carriers and subject to Title II of the Act in their provision of BDS."[109] That is flatly incorrect.

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support that "[c]able providers offer Business Data Services to both retail and wholesale customers indiscriminately").

105 Comcast Comments at 62-66.

106 *Nat. Ass'n of Reg. Util. Comm'rs v. FCC*, 525 F.2d 630, 641-42 (D.C. Cir. 1976) (*"NARUC I"*).

107 Sprint Comments at 91-92.

108 *Id.* (quoting 47 U.S.C. § 153(51) (emphasis added)).

109 *Id.* at 92.

It is axiomatic that an offering of "telecommunications" is not necessarily a common carrier "telecommunications service" subject to Title II.[110] If that were not the case, the well-established concept of private carriage would be irrelevant and eviscerated of any meaning. The Act itself recognizes that there are providers of telecommunications that are *not* inherently common carriers. This distinction is embedded in the Act's definition of "telecommunications carrier," which provides that "[a] telecommunications carrier shall be treated as a common carrier under this Act *only to the extent* that it is engaged in providing telecommunications services."[111] If all entities that offer telecommunications were necessarily common carriers, this provision and other similar distinctions in the Act would have no meaning.[112]

Under both the applicable statutory definition and the *NARUC I* test, the key determinant of whether a carrier provides a common carrier "telecommunications service" is "'the characteristic of holding oneself out to serve indiscriminately.'"[113] As the D.C. Circuit noted in *Vitelco*, the Commission has "viewed the definition of 'telecommunication services,' that is, 'the offering of telecommunications for a fee directly to the public or to such classes of users as to be effectively available directly to the public,' to be essentially a way of restating the definition of

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110 *See, e.g., Virgin Islands Tel. Corp. v. FCC*, 198 F.3d 921, 922, 926-27 (D.C. Cir. 1999) (affirming Commission's decision not to classify a submarine cable system offering "telecommunications" functionality to a specified class of eligible users as a common carrier "telecommunications service," both under the statutory definition and the *NARUC I* test) ("*Vitelco*").

111 47 U.S.C. § 153(51).

112 *See also id.* § 332(c)(2) (distinguishing between private mobile radio service ("PMRS") and commercial mobile radio service ("CMRS"), and explaining that a "person engaged in the provision of a service that is a private mobile service shall not, insofar as such person is so engaged, be treated as a common carrier for any purpose under this [Act]").

113 *Vitelco*, 198 F.3d at 927 (quoting *NARUC I*, 525 F.2d at 642).

common carrier as clarified by *NARUC I.*"[114] And since *Vitelco*, the Commission has continued to classify telecommunications offerings as common carrier services only where they are accompanied by such an *indiscriminate* holding out to the public at large, and has appropriately refused to impose common carrier duties where telecommunications were not offered indifferently to the public at large.[115] To date, the Commission has not departed from the fundamental tenet that a service provider cannot be deemed a common carrier provider of "telecommunication services" where its practice is to make individualized decisions in particular cases whether and on what terms to serve.

The record makes clear that many competitive BDS providers operate on a private carrier basis in serving various customer segments.[116] As explained in Comcast's opening comments, Comcast offers its cell backhaul service and E-Access service based on case-by-case determinations as to whether to offer such services to a given customer, subject to the parties'

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114 *Id.* at 926.

115 *See, e.g.*, *Australia-Japan Cable (Guam) Limited*, Application for License to Land and Operate in the United States a Private Submarine Fiber Optic Cable Extending Between Australia, Guam, and Japan, 15 FCC Rcd 24057 ¶¶ 16, 23 & n.68 (2000); *Federal-State Joint Board on Universal Services, Declaratory Ruling*, 14 FCC Rcd. 3040 ¶¶ 20-21 (1999); *see also Federal-State Joint Board on Universal Service; Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing, End User Common Line Charge*, 13 FCC Rcd 5318 ¶¶ 187-88 (1997) ("[T]he definition of 'telecommunications service' is intended to encompass only telecommunications provided on a common carrier basis. … A carrier will not be a common carrier where its practice is to make individualized decisions in particular cases whether and on what terms to serve." (quotation marks omitted)).

116 *See, e.g.,* Comcast Comments at 63 ("Comcast offers key services at issue—including in particular its cell backhaul and E-Access transport services—on a private carrier basis."); Charter Comments at 17-20 (explaining that "Charter provides BDS through private-carriage arrangements"); NCTA Comments at 12 ("Competitive BDS typically is provided as a private carrier service, particularly with respect to higher-bandwidth services.").

ability to reach agreement on individually negotiated terms and conditions.[117] Similarly, Charter states that it generally enters into individualized negotiations with potential BDS customers, and makes individualized determinations regarding whether and on what terms it will provide BDS.[118] For enterprise customers in particular, Charter states that service relationships are individually tailored, and it is not infrequent that negotiations over terms and conditions of service break down because proposed terms are unacceptable to one party or the other.[119] NCTA further notes that for many of the BDS products offered by its members, customers purchase services through RFPs, where the customer—not the provider—defines the specific service that will be purchased.[120] Indeed, NCTA states that "the final terms for nearly all competitive BDS arrangements are contained not in price lists or tariffs, but in individual contracts negotiated between a provider and its customers."[121]

This record evidence belies Verizon's unsupported claim that "[c]able providers offer Business Data Services to both retail and wholesale customers indiscriminately."[122] Indeed, Comcast never had any obligation to enter the BDS marketplace and did so in reliance on the

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117 Comcast Comments at 64-65. Comcast's retail services, including EDI and Ethernet transport, also frequently involve individualized determinations by Comcast as to whether to extend service to a given customer; the parties may at times be unable to agree on price or other terms and walk away from a transaction as a result. *Id.* at 65-66.

118 Charter Comments at 18.

119 *Id.*

120 NCTA Comments at 12.

121 *Id.* at 12-13.

122 Verizon August 5 Ex Parte at 1. The FNPRM's acknowledgement that Verizon stated that (since obtaining forbearance) it had entered into thousands of private carriage contracts for BDS services also belies Verizon's assertion that all BDS services are offered on a common carriage basis. *See* FNPRM ¶ 257, n.671; Verizon August 5 Ex Parte at 2.

operational flexibility the private carriage model entails.[123] The Commission would need clear and convincing record evidence of an indifferent "holding out" for the services at issue to rebut these showings, and there is no such evidence in the record.

Nor is there any legitimate ground to support a "legal compulsion" for non-dominant BDS providers to offer such services on a common carrier basis, even where they have not been found to do so already. When determining whether "the public interest . . . require[s]" operation "on a common carrier basis," the Commission's "focus" is on whether the provider "has sufficient market power" to be able "to charge monopoly rents" for the service.[124] A provider that does not have market power "should not be regulated as a common carrier,"[125] because it does not have the necessary control over a "bottleneck facility or the sole available means for a . . . user to obtain" a service.[126]

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123 *See Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 ¶ 88 (2005) (describing various operational benefits that flow from private carriage, including the ability of "parties to a contract to modify their arrangement over time as their respective needs and requirements change without the inherent delay associated with" common carrier obligations, and the ability to "experiment with . . . compensation-based arrangements keyed to . . . marketplace performance"); *Domestic Fixed-Satellite Transponder Sales*, Memorandum Opinion, Order, and Authorization, 90 F.C.C.2d 1238 ¶¶ 31-34 (1982) (discussing ways in which private carriage "permit[s] closer planning between the operator and its customers").

124 *AT&T Submarine Systems, Inc*., Memorandum Opinion and Order, 13 FCC Rcd 21585 ¶ 9 (1998) ("*Vitelco Order*"), *aff'd sub nom., Virgin Islands Tel. Corp. v. FCC*, 198 F.3d 921 (D.C. Cir. 1999).

125 *Id*. ¶¶ 9-11.

126 *Cable & Wireless plc Application for a License To Land and Operate in the United States a Private Submarine Fiber Optic Cable Extending Between the United States and the United Kingdom*, Cable Landing License, 12 FCC Rcd 8516 ¶ 16 (1997).

As noted above, the Commission's own discussion of the BDS marketplace demonstrates that cable BDS providers *lack* such market power.[127] In light of Commission staff's finding that cable BDS competition "generally does not have a statistically significant effect" on ILEC prices, it would be inconsistent for the Commission to conclude that cable BDS providers today nevertheless have sufficient pricing power to "charge monopoly rents" for service.[128] Nor do the proponents of regulation in this proceeding introduce *any* evidence that would call these facts into question.[129] And in all events, the FNPRM is devoid of any notice on the issue of whether cable BDS providers ought to be compelled to offer BDS on a common carrier basis—thus precluding the Commission from pursuing such an approach in this proceeding absent a further NPRM that properly raises the prospect of such compulsion and the many complex issues it would entail.[130]

2. The Record Also Confirms That Rate-Regulating Competitive BDS Providers Would Be Arbitrary and Capricious Under the APA

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127 *See, e.g.*, FNPRM ¶ 218 (noting that, by the end of 2016, cable providers are expected to generate less than eight percent of total BDS revenues).

128 *Vitelco Order* ¶ 9.

129 Birch, EarthLink, and Level 3 assert in passing that "even small Business Data Services providers may have the incentive to charge unreasonable prices or to refuse to offer service to some potential customers, such as those they compete with in other markets, in some circumstances." This assertion is not supported by any citation to any instance where this has allegedly occurred, nor by any explanation as to the economic mechanism by which such a purported practice would make financial sense for a BDS provider.

130 *See Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 549 (D.C. Cir. 1983) (explaining that an agency must "describe the range of alternatives being considered with reasonable specificity"); *see also* Charter Comments at 19 (pointing out that the FNPRM provides no notice on whether BDS providers should be compelled to offer private carrier services on a common carrier basis); Comcast Comments at 62 (same); NCTA Comments at 15 (same).

Proponents of rate regulation also do not adequately address the various issues that would make the application of such regulation to competitive providers arbitrary and capricious.[131] Imposing common carrier mandates and price caps on new entrants would represent the opposite of reasoned decision-making, as it would abandon decades of well-settled precedent that has fostered competition and thereby undermine the very goals the Commission seeks to advance. There is accordingly little doubt that pursuing such an approach would be arbitrary and capricious in violation of the APA.

The APA requires that an agency "examine the relevant data," and articulate a decision that "reveal[s] a rational connection between the facts found and the choice made."[132] But price regulation has always been employed as a response to *particular providers'* market power, in order to safeguard consumers and the greater public interest.[133] Again, no one actually contends (let alone demonstrates) that Comcast or any other new entrant in the BDS marketplace possesses any such market power. The comments in this proceeding, as well as the Commission's own economic analysis, demonstrate that while there may be continued ILEC dominance in certain areas,[134] competition is present or taking root in many others, along with the attendant consumer benefits of reduced prices and increased choice, *particularly* in areas

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131 *See generally* Charter Comments at 13-14; Comcast Comments at 72-79; *see also* Cox Comments at 19-20.

132 *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983)).

133 *See* FNPRM ¶ 347 (describing the history and purpose of price cap regulation and stating that "[p]rice cap regulation seeks to replicate *in a market where providers have market power* the beneficial incentives of competition in the provision of interstate access services, while balancing ratepayer and stockholder interests" (emphasis added)).

134 *See, e.g.,* Rysman White Paper at 221 (concluding that "the various sources of data," including revenue data, location data, and price regression analysis, "tell a consistent story" of the continued "outsized presence" of ILECs in BDS markets).

where cable BDS providers like Comcast have made the substantial investments necessary to enter the marketplace.[135]

Notably, particularly in the years following enactment of the 1996 Act, the Commission's consistent response has been to *remove* regulatory impediments from historically dominant ILECs when such carriers could demonstrate that they no longer possessed market power in a particular market, as provided for under the Communications Act.[136] The Commission has remained steadfast in its commitment to avoid regulating new entrants, recognizing that such providers' entry and expansion is key to achieving the Commission's goal of a competitive marketplace. At the same time, regulatory parity should be achieved by relaxing traditional requirements where competition has emerged.[137] Just last month, the Commission issued an

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135 *See* Cox Comments at 24-26; Charter Comments at 6-8; NCTA Comments at 60-62; Comcast Comments at 17-20; *see also* FNPRM ¶¶ 235-36 (describing the recent emergence of CLEC and cable BDS providers, and noting that "[t]he great entry success story has been that of cable," which "has forced even the largest incumbent LECs to focus on maintaining market share"); *id*. ¶¶ 58-59 (describing emergence of non-cable CLECs and cable CLECs as BDS providers); *id*. at Chart 1 (Vertical Systems Group U.S. Carrier Ethernet Services Year-End 2015 Leaderboard).

136 *Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier*, Order, 11 FCC Rcd 3271 ¶¶ 139-42, 12 3 (1995) ("*AT&T Reclassification Order*") (concluding that "AT&T lacks market power in the ... overall market for interstate, domestic, interexchange telecommunications services" and therefore removing price cap regulation for AT&T's residential, operator, 800 directory assistance, and analog private-line services, subject to certain voluntary commitments made by AT&T); *Implementation of Further Streamlining Measures for Domestic 214 Authorization*, Report and Order, 17 FCC Rcd 5517 ¶ 31 (2002) ("*2002 Streamlining Order*"); *Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) from Title II and* Computer Inquiry *Rules with Respect to Its Broadband Services et al.*, Memorandum Opinion and Order, 22 FCC Rcd 18705 ¶ 49 (2007).

137 *See*, *e.g.*, *AT&T Reclassification Order* ¶ 3 (stating that new entrants "should not be viewed as potential monopolists requiring the same degree of economic regulation" as dominant carriers); *Policy and Rules Concerning the Interstate, Interexchange Marketplace; Implementation of Section 254(g) of the Communications Act of 1934, as amended*, Second Report and Order, 11 FCC Rcd 20730 ¶ 9 (1996) (noting that "firms

order "finding that incumbent LECs no longer presumptively exert market power in their provision of [interstate switched access] services," and concluding that, as a result, "dominant carrier treatment under certain of our rules is no longer warranted."[138] The comments in this proceeding provide no hint of any rationale that could justify upending such time-honored principles and precedent in the BDS context.

In fact, today's BDS marketplace is more competitive than ever before *precisely because* the Commission's longstanding deregulatory policy toward non-dominant providers has laid the basis for new entrants to invest, innovate, and challenge entrenched incumbents.[139] A contrary regulatory approach would be fundamentally at odds with the Commission's own blueprint for driving expanded output and increased consumer welfare, and therefore would be arbitrary and capricious. The APA requires that an agency "articulate[] a rational connection between its factual judgments and its ultimate policy choice."[140] But no "rational connection" could exist between the policy goal of promoting competition, innovation, and investment in the BDS marketplace, on the one hand, and the decision to subject new competitors to rate regulation and other onerous regulatory mandates, on the other. As Comcast noted in its opening comments, economic models strongly indicate that the imposition of rate caps would have substantially reduced the network build-out Comcast undertook in recent years and would materially curtail

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lacking market power could not charge unlawful rates because customers could always turn to competitors"); *2002 Streamlining Order* ¶ 30.

138 *2016 Technology Transitions Order* ¶ 8.

139 *See, e.g.,* Cox Comments at 7 (noting that Cox's BDS investment decisions assume that the company would not be "subject to rate regulation" for such services); Comcast Comments at 43 (explaining that "economic models strongly indicate that the imposition of rate caps would have substantially reduced the network build-out Comcast undertook in recent years and would materially curtail such build-out in the future" (citing Mayo Decl. ¶¶ 86-94)).

140 *Ctr. For Auto Safety v. Fed. Highway Admin.*, 956 F.2d 309, 313 (D.C. Cir. 1992) (citing *State Farm*, 463 U.S. at 43).

such build-out in the future.[141] And Comcast and other new entrants with the ability to allocate capital resources across multiple lines of business will invariably focus investments in businesses with greater revenue potential and, all else being equal, fewer regulatory risks and burdens.[142] Any decision to subject non-dominant BDS providers to the same regulatory treatment as dominant incumbents thus would deter the very investment in infrastructure—including the backhaul infrastructure needed for future 5G deployment—that the Commission and the FNPRM seek to support.[143]

The Commission would have an even more difficult time in seeking to justify the elimination of the dominant/non-dominant framework given industry reliance on its longstanding policy of exempting non-dominant BDS providers from rate regulation and the absence of factual changes that could justify turning that framework on its head.[144] Here, any factual changes in the BDS marketplace (including in particular cable providers' lead role in bringing new investment and increased competition) only confirm that the decades-old policy of exempting new entrants from rate regulation remains sound.[145] It would be entirely irrational for the Commission to point to facts on the current state of BDS competition—which has markedly

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141 Comcast Comments at 43 (citing Mayo Decl. ¶¶ 86-94).

142 *Id.* at 76 (citing Raj Decl. ¶ 9).

143 *State Farm*, 463 U.S. at 43 ("[A]n agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.").

144 *See Perez*, 135 S. Ct. at 1209 (noting that where an agency reverses course, it must offer a "more substantial justification" when the "new policy rests upon factual findings that contradict those which underlay its prior policy" and when the prior policy "has engendered serious reliance interests that must be taken into account"); *Fox Television Stations*, 556 U.S. at 515 (same); *cf. INS v. Cardozo-Fonseca*, 480 U.S. 421, 446 n.30 (1987).

145 *See, e.g.*, FNPRM ¶¶ 235-36; *id*. ¶¶ 58-59; *id*. at Chart 1.

improved in recent years—as a basis for substantially expanding regulatory mandates that are properly reserved for circumstances involving *declining* competition or market failure. Moreover, as noted above, it is indisputable that the Commission's longstanding regulatory distinction between dominant and non-dominant BDS providers has engendered substantial reliance interests in the form of billions of dollars in network expansions on the part of cable BDS providers and other new entrants.[146] Nothing in the record supports upending these investment-backed reliance interests by obliterating the Commission's well-established dominant/non-dominant distinction and suddenly applying rate regulation to cable BDS providers.[147]

Finally, commenters that support the imposition of rate regulation on entrants fail to acknowledge the significant costs that such regulation would impose on non-dominant BDS providers,[148] which unquestionably are an "important aspect of the problem" that the Commission is required to consider under the APA.[149] The Commission may not abandon its prior policy without identifying countervailing benefits that would justify the imposition of such significant costs.[150] Given the dearth of evidence in the record that regulating new entrants

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146 *See supra* at 15-16; *see also* NCTA Comments at 1; Charter Comments at 16; Comcast Comments at 7.

147 As the Supreme Court recently underscored, where an agency reverses course, it must offer a "more substantial justification" when the "new policy rests upon factual findings that contradict those which underlay its prior policy" and when the prior policy "has engendered serious reliance interests that must be taken into account." *Perez*, 135 S. Ct. at 1209; *Fox Television Stations*, 556 U.S. at 515 (same).

148 *See supra* at 22-23.

149 *State Farm*, 463 U.S. at 43.

150 *Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015) ("No regulation is 'appropriate' if it does significantly more harm than good."); *Business Roundtable v. SEC*, 647 F.3d 1144, 1151-52 (D.C. Cir. 2011) ("By ducking serious evaluation of the costs that could be imposed . . . , we think the Commission acted arbitrarily.").

would produce *any* benefits, it is highly doubtful that the Commission could justify the significant costs entailed by imposing rate regulation and other heavy-handed regulatory mandates on new entrants in the BDS marketplace.

II. THE MODIFIED RYSMAN PAPER SUFFERS FROM THE SAME FLAWS AS THE ORIGINAL VERSION AND DOES NOT REMOTELY JUSTIFY REGULATION OF COMPETITIVE PROVIDERS

To the extent that proponents of expansive BDS rate regulation believe the late-breaking revisions to Dr. Rysman's analysis somehow improve the case for regulating cable BDS providers, they are mistaken. As an initial matter, the timing of the release of the peer reviews and the Revised Rysman White Paper certainly raises questions about whether the Commission's process in this proceeding comports with its APA duties. The peer reviews are dated April 26 and 28, 2016,[151] yet the Commission waited to release them to the public until June 28, 2016—the day comments on the FNPRM were due. And while the Revised Rysman White Paper is dated "June 2016,"[152] it is far from clear why the changes Dr. Rysman made took nearly two months to implement, or why the Commission waited until commenters had responded to Dr. Rysman's initial analysis before springing the Revised Rysman White Paper on parties in this proceeding. As AT&T remarked, "[w]hatever the FCC's excuse for delaying the release of this critical data, the lack of due process only reinforces that this agency is driving to reach a pre-ordained outcome"—"the very thing that is not supposed to happen under the Administrative

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151 *See* Sweeting Peer Review at 1; Letter of Dr. Tommaso Valletti to Matthew DelNero, FCC, Apr. 28, 2016, at 1, *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0628/DOC-340040A5.pdf.

152 *See* Revised Rysman White Paper at i.

Procedure Act."[153] But in any event, the Revised Rysman White Paper suffers from the same flaws as the original version, and does not remotely justify regulation of cable BDS providers and other new entrants.

To begin with, despite Dr. Rysman's apparent attempt to correct defects in his initial analysis, he failed to fix the most consequential defect of all: his continued reliance on stale pricing data from 2013 that does not reflect today's competitive dynamics.[154] Much of the blame for this flaw lies with the Commission itself, which did not provide Dr. Rysman with useful data for analyzing competitive conditions in the current marketplace. But as Dr. Mayo demonstrated in his opening declaration, there is abundant publicly available information demonstrating that the BDS marketplace is significantly more competitive today than it was three years ago.[155] This evidence—which reflects substantial "growth in demand for high-bandwidth BDS," continued "entry and growth by cable companies, CLECs, and other providers," and sizeable "capacity expansions and investments by BDS providers"—powerfully illustrates the inadequacy of using 2013 data to devise a regulatory scheme for 2017 and beyond.[156] Dr. Mayo's reply declaration expands on these findings and points to additional evidence of substantial marketplace shifts since 2013.[157] Dr. Mayo explains that the evidence submitted by parties in this proceeding "provide[] important validation of the dynamic nature of this marketplace" and demonstrate "that the BDS market has experienced significant growth over the past several years and that the

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153 Bob Quinn, "Wireline Bureau BDS Document Dump," Jun. 29, 2016, *available at* http://www.attpublicpolicy.com/government-policy/wireline-bureau-bds-document-dump/.

154 *See* Revised Rysman White Paper at 3 (acknowledging that "the collected data are for 2013, and the market has evolved somewhat since then").

155 Mayo Decl. ¶¶ 28-45.

156 *Id.* ¶ 31.

157 *See* Mayo Reply Decl. ¶¶ 5-30.

market is projected to grow even more in upcoming years."[158] As he concludes: "The chorus of voices confirming the rapid pro-competitive evolution of the BDS marketplace warrants caution in the establishment of a regulatory regime for 2017 and beyond, especially given the FNPRM's reliance on data from 2013 (including data on monthly bills in multi-year contracts that were negotiated and finalized much earlier than 2013)."[159]

Dr. Rysman's reliance on 2013 data thus substantially undercuts his paper's conclusions about the purported need to expand prescriptive rate regulation. Indeed, the APA forbids the Commission from basing new rules for the BDS marketplace on such a flawed study. Agency action is "arbitrary and capricious" under the APA "if it rests upon a factual premise that is unsupported by substantial evidence,"[160] and courts have explained that "[i]t is not consonant with the purpose of a rule-making proceeding to promulgate rules on the basis of inadequate data."[161] The D.C. Circuit has applied these principles to strike down Commission rules and orders that were premised on studies containing obsolete data, particularly where more recent data indicated that the Commission's marketplace assumptions were unfounded.[162] The

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158 *Id.* ¶¶ 7-8.

159 *Id.* ¶ 27.

160 *Center for Automotive Safety v. Federal Highway Admin.*, 956 F.2d 309, 314 (D.C. Cir. 1992).

161 *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 393 (D.C. Cir. 1973).

162 *See, e.g., Comcast Corp. v. FCC*, 579 F.3d 1, 14 (D.C. Cir. 2009) (striking down cable subscribership cap where Commission "relie[d] upon data from 1984-2001 and, as a result, fail[ed] to consider the impact of DBS companies' growing market share (from 18 to 33 percent) over the six years immediately preceding issuance of the Rule, as well as the growth of fiber optic companies").

Commission has been admonished for its "dereliction" of its APA duties in such cases,[163] and should avoid committing the same error here.

Moreover, Dr. Rysman—like other proponents of price caps—continues to focus solely on *ILECs'* market power and does not purport to justify regulation of competitive providers.[164] Dr. Rysman writes that his "paper studies what are arguably three different data sets covering revenue, locations and prices," and asserts that he "find[s] evidence of ILEC market power in each."[165] Such evidence—even if it accurately reflected *today's* competitive environment—does not support rate-regulating providers that lack such market power. And as noted above, the staff paper's conclusion (in defending the Rysman analysis) that "the presence of the potential cable competition generally does not have a statistically significant effect" on ILEC prices strongly indicates that cable competitors cannot have the sort of market power that would justify regulating them.[166]

By the same token, Dr. Rysman did not consider or address the many harms to competition that would result from regulating competitive BDS offerings. Notably, one of the peer review papers that the Commission offers in *support* of the Rysman analysis calls into question whether the magnitude of the competitive effects observed by Dr. Rysman justifies rate regulation even for incumbent providers, noting that "market power may be too limited to rationalize regulation even without facilities-based competition even if the effects of competition

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163 *Id.* at 20 (citing *Time Warner Entertainment Co. v. FCC*, 240 F.3d 1126 (D.C. Cir. 2001), in which the Commission similarly failed to cite adequate factual support for its predictions regarding the possibility of coordinated conduct by cable providers in establishing a subscriber cap).

164 *See* Revised Rysman White Paper at 3.

165 *Id.*

166 *See* Staff Cable BDS Report at 1.

are statistically significant."[167] Dr. Farrell agrees, explaining in his reply declaration that the incremental benefits of applying rate regulation are so modest that they would be vastly outweighed by the costs of such an approach.[168] Instead, "the Commission should focus its attention on reducing entry barriers and barriers to customer switching and refrain from forms of price regulation that would discourage otherwise plausible beneficial competitive entry."[169]

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167 Sweeting Peer Review at 10; *see id.* at 12 (positing "scenarios under which [Dr. Rysman's] conclusions might be invalid").

168 *See* Farrell Reply Decl. ¶¶ 6-17, 99-100.

169 *Id.* ¶ 27 (quoting Farrell. Decl. ¶ 7).

CONCLUSION

Subjecting cable BDS providers to prescriptive rate regulation would be contrary to common sense, established precedent, the Commission's goals of promoting competitive entry and investment, and now the clearly stated viewpoints of a sizeable majority of commenters in this proceeding. The record makes clear that, however the Commission proceeds with its "fresh start" to BDS regulation, it plainly should avoid overregulating the key drivers of competition in the BDS marketplace.

Respectfully submitted,

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August 9, 2016

Exhibit A

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Business Data Services in an Internet Protocol Environment	)	WC Docket No. 16–143
	)	
	)	
Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans	)	WC Docket No. 15–247
	)	
	)	
Special Access for Price Cap Local Exchange Carriers	)	WC Docket No. 05–25
	)	
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services	)	RM–10593

REPLY DECLARATION OF JOSEPH FARRELL, DPHIL

August 9, 2016

List of figures

I. Executive summary

(1) Price regulation is a highly imperfect response to problems of market power. Accordingly, modern public policy, and the consensus of economic research, overwhelmingly favor protection of competition in imperfectly or nascently competitive industries, rather than widespread price regulation. This is especially true in dynamic, innovative industries with idiosyncratic customer demand and significant ongoing entry, such as BDS. The Commission joins in this consensus when it writes that "competition is best," and is rightly seeking ways to protect competition and entry in the BDS industry.

(2) It is thus jarring that the FNPRM simultaneously seems to contemplate extending price regulation to non-monopoly BDS markets. It appears to base this on evidence that, for example, BDS markets with two providers may on average have higher prices than do the very few with three or more providers. Commenters question the strength of this evidence—and I add to that debate in this Reply—but even if that evidence were conclusive, such price correlations are a staple finding in many industries and are regularly interpreted as a basis for protecting competition. They are almost never seen (or used) as a basis for widespread price regulation.

(3) For those reasons, it is no small and obvious step, but a giant leap, from discussion of how BDS pricing relates to various measures of competition to any conclusion recommending price regulation in non-monopoly markets, or price regulation of entrants into markets that were formerly but post-entry are no longer monopoly markets.

(4) Parties that favor such price regulation have submitted economist comments that predominantly express those economists' relative confidence in the price correlations; parties who oppose such price regulation have submitted economist comments that, among other things, point out weaknesses in those price correlations and their interpretation. But the main point is that neither the FNPRM nor economist commenters have made a serious effort to address or justify the giant leap from price correlations, however well established, to the imposition of widespread price regulation.

(5) This failure to examine the giant leap from price correlations to price regulation is especially problematic in that, to the extent that the correlations and their interpretation are well established, they show that competitive entry benefits customers, and price regulation of non-incumbent providers in non-monopoly markets will clearly discourage entry.

II. Price regulating competitive providers and/or imperfectly competitive BDS markets would be unwise

(6) As my June 2016 Declaration discussed, government price regulation has some very important drawbacks.[1] This is particularly true given what the record indicates are some of the key features of the BDS market: innovation, idiosyncratic customer needs, widely varying costs, and competitive entry that is growing but not yet pervasive and that responds to entry incentives.[2]

(7) Some commenters in this proceeding have recommended that price caps be reset and/or joined in the FNPRM's lauding of some advantages of price caps over more traditional rate-base price regulation.[3] The real point, however, is not the relative merits of one form of price regulation versus another, but the appropriate scope of price regulation in non-monopoly markets or of new entrants.

(8) I hope it is not unduly optimistic to believe that a near consensus on this point among economists may underlie the pattern discussed in Section III.B: that those economists commenting on the FNPRM, even those who view the evidence as more firmly establishing bigger price effects than do their colleagues, generally do not urge the Commission to extend price regulation to non-monopoly markets.

(9) For these reasons, I reiterate the position in my June 2016 Declaration: "The Commission should focus its attention on reducing entry barriers and barriers to customer switching and refrain from forms of price regulation that would discourage otherwise plausible beneficial competitive entry."[4]

(10) My review of other comments submitted in this proceeding has not changed my views on that conclusion or on my reasons for holding it, and I will refrain from reprising those reasons here.

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1 Declaration of Joseph Farrell, attached as Exhibit A to Comments of Comcast Corporation, June 28, 2016 [hereinafter "Farrell Decl."] §§ VI, VII, VIII.

2 *See* FNPRM ¶ 189. ("[The Commission] agree[s] with several commenters recognizing that since this proceeding began in 2005, there has been significant innovation, investment and deployment of IP-based technologies."). *See also* evidence cited in Farrell Decl., § V.B. ("Customer needs and associated costs of providing service are diverse") and *Id.* VI.B. ("Entry in this industry significantly responds to entry incentives"). *See also* FNPRM, ¶ 3. ("The best available data suggest that competitive entry and potential competition are bringing material competitive benefits to some places and to some products (most notably high bandwidth services), but competition remains stubbornly absent from other places and different products (most notably low bandwidth services). And not all consumers are the same- in particular multi-location businesses, like large retail chains, have very distinctive requirements.")

3 As I noted in my June 2016 Declaration, the economic literature on price regulation does not see price caps as a panacea. *See* Farrell Decl., § V. Moreover, as I discuss in Appendix B, even the cost-reduction incentive merits of price caps are undermined by regulatory resets.

4 Farrell Decl., ¶ 7.

II.A. Should the Commission price regulate competitive providers?

(11) The Commission has asked whether all providers should face price regulation in a market it deems noncompetitive through application of its proposed Competitive Market Test.[5] As I hope is clear from my June 2016 Declaration and from this Reply, if a sound competitive market test identifies more than one provider, price regulation is likely to be unnecessary and dangerous, so the question of whether "all" providers' prices should be regulated is in principle already addressed. However, it is possible that monopoly sub-markets might persist inside non-monopoly Census block markets, for example, if a competitive provider can realistically compete for some but not all customers within the Census block. If to deal with this possibility the Commission were to decide as a stopgap to retain some price regulation in some "markets" notwithstanding limited competitive entry, one could ask whether it makes sense to regulate all providers' prices in those cases.[6]

(12) I believe the right answer is no, for several reasons.

(13) First, it is difficult to combine binding price regulation with flexibility and incentives to innovate and serve idiosyncratic customer preferences. For example, in order to sustain binding price regulation across a technology transition, the Commission proposes to retain a requirement that (regulated) providers transitioning from TDM to packet-based service must offer a comparable packet-based service at a comparable price. Depending on just how it is interpreted, such a requirement could well discourage such transitions, and if all providers are subject to the requirement, customers would then lose the benefits of newer technology. One valuable and administrable safety valve on this problem may be to regulate one provider (probably relatively lightly) and to leave others with flexibility and incentives. If such potentially beneficial asymmetric regulation is pursued, it would make practical sense to regulate the ubiquitous provider for whom there is already a regulatory structure in place. Moreover, limiting price regulation to incumbents would also mitigate the adverse effects of price regulation on entry incentives: while those incentives are also dampened by a mandated lowering of the incumbent local exchange carrier's (ILEC's) prices (before and/or after entry, as I discussed in my June 2016 Declaration), that dampening is likely (in the presence of product differentiation and/or bargaining over joint gains) to be less severe than the dampening that it would be if the entrant expects its own price to be directly price regulated.

(14) Second, while Professor Marc Rysman's study seeks to identify markets in which market power is found, his price analysis uses only ILEC prices. Thus, setting aside for now whether it convincingly achieves that, his price analysis arguably comes closer to identifying markets in which the ILEC has market power than identifying circumstances (if any) in which competitive providers have market power.

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[5] FNPRM, ¶¶ 308–09.

[6] An analytically better approach to this possibility would be to measure competitive presence more accurately.

(15) An additional practical consideration is that there could well be administrative lags in reclassifying formerly "noncompetitive" markets following entry sufficient to make the market "competitive." If the Commission's policy is to price regulate all providers' prices in "noncompetitive" markets, those lags would have the effect of creating an entire category of "false positives." If instead new entrants' prices are not regulated (but are constrained by having to compete against the ILEC's regulated price), those false positives are at least mitigated.

III. Even reliable findings of incremental price effects of additional BDS providers would not imply that non-monopoly BDS markets should be price regulated

(16) Economists commenting in this proceeding have already extensively discussed the approach and data used by Professor Rysman to estimate incremental average price effects of additional competitors in BDS markets. Professor Rysman himself offered numerous caveats to his study, as have the Commission's peer reviewers and other commenters, some of whom have also put forward other studies of such price effects.[7]

(17) But we should not allow that debate to occlude the big picture. Findings of such average price effects are a commonplace in industrial organization economics and are seldom interpreted as suggesting, let alone proving, a need for price regulation, especially in non-monopoly markets. And that is for good reason: price regulation has important flaws, especially in dynamic non-monopoly markets with idiosyncratic customer needs, as described briefly, for example, in my June 2016 Declaration.[8] Neither Professor Rysman's study nor the FNPRM even attempts to address or justify the giant leap from finding that the presence of more BDS competitors is correlated with better outcomes for customers—even if that finding were solid—to concluding that the Commission should regulate prices that it diagnoses as imperfectly competitive.

(18) While I defer many of my comments on Professor Rysman's work to Section IV.A.1, Section V, and Appendix A, it is worth foreshadowing one point. Depending on the geographic "market" considered, a large fraction of his data are gathered from either monopoly or duopoly markets;[9] and his regressions are largely conducted in terms of an indicator variable that distinguishes between monopoly and everything else.[10] To the limited degree that he addresses the topic, Professor Rysman's estimates of the incremental effects of third and subsequent providers are often challenging (or not even possible) to read from his tables.[11] Whether there is a competitive problem to fix in some non-monopoly markets (let alone whether price regulation would do so) is, of course, not illuminated by estimates of differences between monopoly markets and everything else.

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7 *See* Section IV, Section V, and Appendix A for my take on these studies and the resulting estimated incremental price effects.

8 Farrell Decl., § V.A.

9 *See* Marc Rysman, "Empirics of Business Data Services," White Paper, attached as Appendix B to FNPRM, revised June 2016 [hereinafter "Revised Rysman White Paper"], Tables 7 and 9.

10 In his Table 19, Professor Rysman considers the incremental impact of one, two or three, and four or more additional competitors in the Census block but not the building. However, his approach is problematic for interpreting incremental price effects, and I discuss this issue further in Section IV.A.1 and Appendix Section A.1.b.

11 *See* Section IV.A.1 for further discussion.

III.A. The economic literature estimating incremental price effects recommends promoting competition rather than price regulation

(19) The economic literature has repeatedly found that "[i]n cross-section comparisons involving markets in the same industry, seller concentration is positively related to the level of price."[12] Richard Schmalensee's (1989) survey in the widely cited *Handbook of Industrial Organization* distills this "stylized fact" in light of what he describes as "strong support" from studies in a range of industries.[13]

(20) A considerable number of intra-industry pricing studies, especially since the time of Schmalensee's (1989) survey, have sought to illuminate the competitive effects of horizontal mergers, either prospectively or retrospectively. Since a merger may reduce the number of competing firms (absent entry that sometimes occurs in response to a merger), such studies can provide information about connections between price and competitor presence.

(21) Among prospective studies, one example, cited by Professor Rysman as analogous to his work for this proceeding (although see comments in Appendix A.3), was analyzed by the Federal Trade Commission (FTC) and others in the context of a proposed Staples and Office Depot merger in 1997.[14] Those studies indicated that prices were lower where more of the three office superstore chains competed.[15] But there was no suggestion that in cities with only one or two of the three office supply superstores, office supply prices should therefore be government regulated.

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[12] Richard Schmalensee, "Inter-Industry Studies of Structure and Performance," in *Handbook of Industrial Organization*, Vol. II, eds. Richard Schmalensee and Robert D. Willig, 951–1009 at 988 (Amsterdam: North-Holland, 1989). Note that these intra-industry price studies in general suffer fewer problems and find more stable relationships than the literature on inter-industry profit studies. *See also* Michael Salinger, "The Concentration-Margins Relationship Reconsidered," *Brookings Papers: Microeconomics,* 1990: 287–335. Salinger acknowledges that in the literature there has been much debate about the concentration-profit relationship analyzed by using inter-industry studies. He finds, after addressing methodology and data issues, that the relationship has been stable over time. However, comments at the end of the article reiterate lack of consensus.

[13] Richard Schmalensee, "Inter-Industry Studies of Structure and Performance," in *Handbook of Industrial Organization*, Vol. II, eds. Richard Schmalensee and Robert D. Willig, 951–1009 at 987 and n. 34 (Amsterdam: North-Holland, 1989).

[14] *Federal Trade Commission v. Staples, Inc.*, 970 F. Supp. 1066 (D.D.C. 1997) (granting the FTC's motion for a preliminary injunction).

See, e.g., Orley Ashenfelter, et al., "Empirical Methods in Merger Analysis: Econometric Analysis of Pricing in *FTC v. Staples*." *International Journal of the Economics of Business* 13 (2006): 265–79.

See also Jonathan B. Baker, "Econometric Analysis in *FTC v. Staples*," *Journal of Public Policy & Marketing* 18 (1999): 11–21.

See also Serdar Dalkir and Frederick R. Warren-Boulton, "Prices, Market Definition, and the Effects of Merger: Staples–Office Depot (1997)," in *The Antitrust Revolution,* 6th ed., eds. John E. Kwoka Jr. and Lawrence J. White, 166–93 (New York: Oxford University Press, 2014).

[15] *See, e.g.*, Serdar Dalkir and Frederick R. Warren-Boulton, "Prices, Market Definition, and the Effects of Merger: Staples-Office Depot (1997)," in *The Antitrust Revolution,* 6th ed., eds. John E. Kwoka Jr. and Lawrence J. White, 166–93 at 173 (New York: Oxford University Press, 2014).

(22) In airlines, a recent study by Professor John Kwoka and co-authors used the Staples and Office Depot approach to analyze how airline pricing is affected by the number and type of competitors.[16] The authors argue that their "findings have significant implications for how airline competition should be analyzed both by researchers and by policymakers."[17] They suggest that policy should address the spreading of "consolidation" to the competitive low-cost segment.[18] Notably, they do not recommend re-regulation. In the case of airlines, some (mostly non-economist) observers have suggested that re-regulation would have benefits, but I have not seen that suggestion explicitly based on studies such as Kwoka et al. (2016). In any case, as Borenstein (1992) noted:

> The simplest prediction of economists about airline deregulation, and one of the few on which nearly all economists agreed, was that deregulation would improve consumer welfare in comparison to continued price and entry regulation. Fourteen years later, nearly all economists still agree on this, though the degree of enthusiasm for the deregulation outcome varies considerably.[19]

(23) Similarly, collating and analyzing merger retrospective studies in a variety of industries, Kwoka (2015) finds evidence of widespread "nontrivial" average price increases following the loss of a competitor through merger and discusses implications for merger policy.[20] This is consistent with the

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16 Declaration of John Kwoka, attached as Exhibit A to Sprint Comments, filed June 28, 2016 [hereinafter "Kwoka Decl."], ¶¶ 8, 11, and n. 3; John Kwoka, Kevin Hearle, and Phillippe Alepin, "From the Fringe to the Forefront: Low Cost Carriers and Airline Price Determination," *Review of Industrial Organization* 48 (2016): 247–68.

17 John Kwoka, Kevin Hearle and Phillippe Alepin, "From the Fringe to the Forefront: Low Cost Carriers and Airline Price Determination," *Review of Industrial Organization* 48 (2016): 247–68 at 268.

18 John Kwoka, Kevin Hearle and Phillippe Alepin, "From the Fringe to the Forefront: Low Cost Carriers and Airline Price Determination," *Review of Industrial Organization* 48 (2016): 247–68 at 268.

19 *See* Severin Borenstein, "The Evolution of U.S. Airline Competition," *Journal of Economic Perspectives* 6 (1992): 45–73 at 45.

See also Steven A. Morrison and Clifford Winston, *The Evolution of the Airline Industry* (Washington, DC: Brookings Institution Press, 1995), 159–60. ("In principle, public policy toward the airline industry could be constructive if it expedited industry evolution and, where appropriate, fine-tuned it. Experience shows, however, that although the industry has had close ties to the federal government since its inception, it is better for government to keep its hands off. We have uncovered no evidence that justifies reregulation, new regulation, or a more activist antitrust policy. Nonetheless, public and official concern over the industry's large losses led to the creation in April 1993 of the National Commission to Ensure a Strong Competitive Airline Industry. That the commission did not call for major new regulation or reregulation can be seen as implicit support for the conclusion we have reached.") (*Internal citations omitted.*)

See also Severin Borenstein and Nancy L. Rose, "How Airline Markets Work…or Do They? Regulatory Reform in the Airline Industry," in *Economic Regulation and Its Reform: What Have We Learned?* ed. Nancy L. Rose, 63–135 at 79, 104, and 130 (Cambridge, MA, and Chicago: NBER and The University of Chicago Press Books, 2014). ("[M]ore than three decades of deregulation has taught lessons about antitrust and consumer protection that would likely influence and, one hopes, improve public policy toward a less regulated airline industry… After more than three decades of experience with airline deregulation, some observers continue to call for renewed government intervention in the economic decision making of the industry… For most consumers, airline deregulation has been a benefit. For many airlines, it has been a costly experiment, though a few have prospered in the unregulated environment. Both the companies and economists studying the industry continue to learn from the industry dynamics.")

20 John Kwoka, *Mergers, Merger Control, and Remedies. A Retrospective Analysis of U.S. Policy* (Cambridge, MA: The MIT Press, 2015), 99.

consensus tone of this now extensive economic literature, which views the studies of average price effects as informative for antitrust policy but seldom suggests price regulation.[21]

(24) Indeed, Kwoka (2015) notes parallels between price regulation and "conduct remedies" for mergers and argues that the merger retrospective studies suggest that conduct remedies are ineffective compared to maintaining actual competition (by preventing anticompetitive mergers or through a well-designed structural remedy).[22]

(25) Finally, in this proceeding, Professor Kwoka and Drs. Stanley Besen and Bridger Mitchell offer summaries of strands of the economics literature that analyze the "number of competitors that are needed to discipline pricing."[23] In sum, while it varies greatly by industry and none of the academic studies cited focuses on BDS, it is not unusual to find that the presence of more competitors is associated with lower average prices. But this does not at all vindicate the position that if the Commission were to reach a similar conclusion in BDS, it would follow that price regulation should

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[21] *See, e.g.*, Orley Ashenfelter, Daniel S. Hosken, and Matthew C. Weinberg, "The Price Effects of a Large Merger of Manufacturers: A Case Study of Maytag-Whirlpool," *American Economic Journal: Economic Policy* 5 (2013): 239–61 at 259–60. The authors conclude that "the merger of Maytag and Whirlpool harmed US consumers. [They] estimate large price increases for Whirlpool clothes dryers and Maytag dishwashers, and [they] find no consistent evidence of merger-induced price reductions for the other affected appliance categories." They further note that "[t]he ability to use the findings of any one case study to comment on US horizontal merger policy, more generally, is clearly limited. However, by conducting a large number of case studies, economists can credibly determine if horizontal merger enforcement is being properly enforced. While the ability to generalize from the published literature is somewhat limited due to the small fraction of consummated mergers that have been studied, the results of our study are consistent with the findings of this literature: mergers that are on the enforcement margin have, on average, resulted in consumer price increases."

See also Joseph Farrell, Paul A. Pautler, and Michael G. Vita, "Economics at the FTC: Retrospective Merger Analysis with Focus on Hospitals," *Review of Industrial Organization* 35 (2009): 369–85.

[22] John Kwoka, *Mergers, Merger Control, and Remedies. A Retrospective Analysis of U.S. Policy* (Cambridge, MA: The MIT Press, 2015), 138–139, 142. *See also* John E. Kwoka and Diana L. Moss, "Behavioral Merger Remedies: Evaluation and Implications for Antitrust Enforcement," *Antitrust Bulletin* 57 (2012): 979–1011 at 997. ("The characteristics of the new behavioral remedies—their scope, their intrusiveness, the need for on-going oversight—raise a number of significant concerns about their likely operation and effectiveness. Significantly, many of these concerns are similar to those raised by traditional industry regulation. . . What is striking about this analogy is that traditional regulation has come to be widely known for various inherent limitations, administrative costs, and unintended effects. Indeed, much of the modern economic theory of regulation examines the forces and conditions that handicap regulatory authorities and undermine the effectiveness of regulatory policy. And a great many economic studies have demonstrated the practical problems inherent in any effort to constrain normal profit-maximizing behavior by use of rules and oversight.")

[23] *See* Declaration of Stanley M. Besen and Bridger M. Mitchell, attached as Attachment 1 to Sprint Comments, filed Jan. 27, 2016, [hereinafter "Besen and Mitchell Decl."], ¶ 45 and citations therein. Drs. Besen and Mitchell list studies regarding food retailing, condominium apartments in Stockholm, Sweden, tax-exempt general obligation bonds and revenue bonds, offshore oil leases, and National Forest Service timber in the Pacific Northwest. None of the studies that they cite in support of their conclusion recommend price regulation. Lamm (1981) discusses certain policy concerns from his analysis of price and competition in food retailing, but specific measures to price regulate this industry are not suggested. *See* R. McFall Lamm, "Prices and Concentration in the Food Retailing Industry," *Journal of Industrial Organization* 30 (1981): 67–78 at 76.

See also Kwoka Decl., ¶ 17 and citations therein. Professor Kwoka cites a study involving generic drugs, but this study does not appear to support price regulation. If anything, Reiffen and Ward (2005) caution against the use of regulation because it may impact entry. Professor Kwoka also cites his own working paper that finds "higher prices from mergers up to the point where there are more than five remaining "significant competitors"' from a meta-analysis of merger retrospectives; again, this paper does not recommend price regulation.

be imposed or strengthened. On the contrary, as summarized above and as any reading of the economic literature as a whole would confirm, the consensus view among economists participating in this literature is that while studies showing price effects from additional competition may inform competition policy, price regulation as a response is seldom even mentioned.

III.B. Commenters do not analyze the big step from price effects to price regulation

(26) Economist commenters in this proceeding have focused largely on the hypothesis that BDS markets with more competitors present have lower prices on average. Those who explicitly discuss the merits and drawbacks of price regulation, especially of non-monopolist providers, have not concluded that it would be wise.

(27) In particular, those economist commenters who address the price effect studies generally either do not recommend widespread price regulation of BDS or do not clarify the analysis that takes them from average price effects to price regulation—a big step in light of the serious downsides of price regulation and of the overall message of the economic literature on price effects. The basic positions of these commenters are summarized below.

III.B.1. Economists recommending against widespread price regulation

(28) Dr. Mark Israel, Professor Daniel Rubinfeld, and Professor Glenn Woroch [hereafter IRW] (submitting on behalf of AT&T and CenturyLink) and Professor Marius Schwartz and Dr. Federico Mini (submitting on behalf of the American Cable Association) recommend against price regulation. IRW, in particular, argue against the use of price regulation in areas where ILECs compete with rivals.

- IRW state in their January 27, 2016 declaration:

> As a matter of economics, price cap regulation is unnecessary and is, in fact, counterproductive in areas where rivals have deployed competing facilities-based networks. As explained above, where competitors have deployed sunk facilities in an area, they can and do compete against ILEC special access services, and thus provide competition-based market discipline. In allowing pricing flexibility only after rivals have deployed fiber networks, the Commission's analytical framework recognizes the competitive significance of CLEC deployment in (i) constraining special access

> prices, as well as (ii) the role of sunk investments in preventing ILEC from charge *[sic]* non-competitive prices as the result of exclusionary or predatory tactics.[24]

- Their most recent declaration, on June 28, 2016, again cautions against additional regulation of BDS:

> Even if Prof. Rysman's analysis did not overstate the likely price impacts, the small effects that he shows are insufficient to document a problem that warrants regulatory intervention. Any new regulations come with their own risk. As just one example, regulations that require ILECs to reduce prices for DS1 and DS3 services risk substantially undermining incentives for customers to migrate to next generation, and more efficient, Ethernet offerings.[25]
>
> We understand that the Commission has asked whether the data supports regulating Ethernet services. The evidence we have reviewed in this proceeding indicates that the Ethernet marketplace—for all speeds—is highly competitive.[26]
>
> As a matter of economics, price cap regulation is unnecessary and is, in fact, counterproductive in areas where rivals have deployed competing facilities-based networks. As a matter of economics, the *first* competitor would have the largest competitive impact, with additional competitors having only a diminishing incremental effect.[27]

(29) Professor Schwartz and Dr. Mini argue against the use of price regulation for non-incumbent/non-TDM services, and comment that "extending price regulation [to entrants/non-ILECs] would be economically unwise. Price regulation should be confined to legacy TDM services—where they retain substantial market power—which were developed and offered pursuant to a government provided monopoly franchise."[28] Their objective in recommending against price-regulating entrants is to "preserve incentives to invest and innovate. Subjecting entrants to price caps can undermine such incentives, even if the caps are the same as for the incumbent."[29]

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24 Declaration of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, Jan. 26, 2016, 13–14.

25 Declaration of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, June 28, 2016 [hereinafter "IRW June Decl."], 21.

26 IRW June Decl., 24.

27 IRW June Decl., 40 (*internal citations omitted*).

28 Declaration of Dr. Marius Schwartz and Dr. Federico Mini, attached as Appendix A to ACA Comments, filed June 28, 2016, [hereinafter "Schwartz and Mini Decl."] 3–4.

29 Schwartz and Mini Decl., 8.

III.B.2. Economists stressing price effects with little or no analysis of price regulation

(30) Professor Rysman was asked to provide a screen to identify "competitive" and "noncompetitive" markets[30] but apparently was not asked to comment on the appropriateness of price regulation for the BDS industry.[31] Similarly, the Commission explicitly instructed the peer reviewers of Professor Rysman's study to not "evaluate any policy implications that might arise from use of the White Paper."[32]

(31) Some other economist commenters have focused primarily on Professor Rysman's or other findings indicating that average price effects are correlated with the number of competitors present in a market, but without explicit analysis or even discussion of the merits of price regulation as a response. Those economists either are not recommending price regulation (the more likely reading, given the general consensus of the oligopoly literature as discussed above) or (a less likely reading) are possibly assuming, without analysis and contrary to the general consensus, that any price effects would justify price regulation.

(32) For example, Professor Kwoka (submitting on behalf of Sprint) concludes that in the BDS industry competition is imperfect and insufficient to bring prices to fully "competitive" levels. He opines that:

> There seems little dispute in the record that DS1 and DS3 services lack sufficient competition to bring prices to competitive levels.[33]
>
> The collective weight of the… evidence leads me to conclude that competition in highband service is not sufficient to bring price down to competitive levels.[34]

(33) Professor Kwoka does not take the step from his conclusions about price effects to any recommendation about price regulation.[35]

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[30] Revised Rysman White Paper, 2. ("An important goal of this project is to provide guidance to the FCC as it engages in a revamping of its regulatory approach to this industry. In particular, I have been instructed to examine whether, and if so where, there is market power in this industry.")

[31] Professor Rysman notes that "[l]ooking beyond market power, it would be valuable to extend the analysis of the broad range of data available to the FCC to identify and develop triggers the FCC could use to choose when to apply, or refrain from applying, price cap and other regulation to this industry." *See* Revised Rysman White Paper, 3.

[32] Letter from Matthew S. DelNero, Chief, Wireline Competition Bureau, FCC, to Andrew Sweeting, Associate Professor, University of Maryland (April 14, 2016) at 2, *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A2.pdf; Letter from Matthew S. DelNero, Chief, Wireline Competition Bureau, FCC, to Tommaso Valletti, Professor of Economics, Imperial College London (April 14, 2016) at 2, *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A3.pdf.

[33] Kwoka Decl., ¶ 5.

[34] Kwoka Decl., ¶ 45.

[35] A possible but very ambiguous exception is in one of his footnotes, where he states that he believes that Professor Rysman's statement that regulation of high-band BDS may not be necessary, "even with qualifiers, goes too far."

(34) Like Professor Kwoka, Drs. Besen and Mitchell (also submitting on behalf of Sprint) focus largely on price effects:

> Collectively, the analyses outlined above demonstrate that, in the vast majority of purchaser locations and census blocks, there are fewer suppliers of special access service than are necessary for a fully competitive outcome.[36]

(35) Drs. Besen and Mitchell similarly do not comment on or analyze the giant leap from average price effects (if substantiated) to widespread price regulation.

(36) Similarly, Professor Jonathan Baker (submitting on behalf of Level 3 Communications and Windstream) focuses on average price effects of competitor presence but does not offer any extensive analysis of why such effects here would imply the wisdom of price regulation.

(37) Professor Baker concludes that:

> Given the structure of dedicated services markets, ILECs are likely able to exercise market power in most markets, and would be expected to charge prices above competitive levels unless prevented by regulation.[37]

> In markets for dedicated services with a single provider – the majority of markets – the dedicated services monopolist would have the incentive and ability to charge a supracompetitive price. Markets with two providers –most of the rest – are also unlikely to perform competitively. As a general matter, the economics literature recognizes that markets with more than one significant firm do not necessarily perform competitively, and that firms will likely exercise market power in markets with few market participants. That is the prediction of most common oligopoly models, and the common finding of within-industry studies is that greater concentration leads to higher prices.[38]

Kwoka Decl., n. 13.

[36] Besen and Mitchell Decl., ¶ 31.

[37] Declaration of Jonathan B. Baker, filed Jan. 27, 2016, and resubmitted on Apr. 14, 2016 [hereinafter "Baker January Decl."], ¶ 7.

See also Declaration of Jonathan B. Baker, filed June 28, 2016, and resubmitted on July 14, 2016 [hereinafter "Baker June Decl."], ¶ 33. ("ILECs are likely able to exercise market power in the provision of business data services, and would be expected to charge prices above competitive levels unless prevented by regulation.")

[38] Baker January Decl., ¶¶ 47–48 (*internal citations omitted*).

> The structure of dedicated services markets indicates that ILECs are likely able to exercise market power in most markets, and would be expected to charge prices above competitive levels unless prevented by regulation.[39]

(38) Other economist commenters, such as Ms. Susan Gately (submitting on behalf of Ad Hoc Telecommunications Users Committee),[40] Mr. William Zarakas and Ms. Susan Gately (submitting on behalf of Sprint),[41] Mr. William Zarakas and Dr. Jeremy Verlinda (submitting on behalf of Sprint),[42] Dr. Chris Frentrup (submitting on behalf of Sprint),[43] and Drs. Mark Meitzen and Philip Schoech (submitting on behalf of AT&T),[44] also do not explicitly recommend price regulation.

III.B.3. Economists arguing for stronger price regulation without commenting on price effects from competition

(39) I am aware of two economist submissions that do recommend (or at least appear implicitly to recommend) stronger price regulation in BDS. Neither links their recommendations to the studies of competitive effects on prices.

(40) Professor David Sappington (submitting on behalf of Sprint, together with Mr. William Zarakas) supports stronger price cap regulation but does not seem to advocate extending it to non-incumbent providers.[45] Professor Sappington's February 19, 2016 declaration suggests that the data request

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[39] Baker January Decl., ¶ 107.

Jonathan Baker's February 17, March 1, and April 21 declarations reiterate the conclusion he made in his initial declaration. For example, his April 21 declaration concludes: "For the reasons set forth above, nothing in the ILEC economists' latest declaration leads me to question the conclusion I reached in my initial report that ILECs likely exercise market power in most dedicated services markets and would be expected to charge prices above competitive levels unless prevented by regulation." *See* Declaration of Jonathan B. Baker, filed Apr. 21, 2016, ¶ 41.

[40] Ms. Gately's declaration, filed on January 27, 2016, does not appear to discuss {{ }}. Instead, it focuses on establishing whether {{ }}. She finds that {{ }} *See* Declaration of Susan M. Gately, attached to the Ad Hoc Telecommunications Users Comments, filed Jan. 27, 2016, § II.

[41] Ms. Gately also submitted a declaration co-authored with Mr. Zarakas on January 27, 2016. This declaration does not comment on price regulation, but rather attempts to calculate shares. Declaration of William P. Zarakas and Susan M. Gately, attached as Attachment 2 to Sprint Comments, filed Jan. 27, 2016, ¶ 3.

[42] Mr. Zarakas and Dr. Verlinda comment on Professor Rysman's regression results and the extent of competition. They find that "[r]egression analysis performed for specific products ({{ }}) indicate that prices for those products {{ }}." They too do not specifically comment on price regulation. *See* Declaration of William P. Zarakas and Jeremy A. Verlinda, attached as Exhibit D to Sprint Comments, filed June 28, 2016 [hereinafter "Zarakas and Verlinda Decl."], ¶ 23.

[43] Dr. Frentrup's June 28, 2016, declaration finds that "{{ }}" *See* Declaration of Chris Frentrup, attached as Exhibit B to Sprint Comments, filed June 28, 2016 [hereinafter "Frentrup Decl."], ¶ 11.

[44] Drs. Meitzen and Schoech evaluate the appropriate measure for setting the X-factor for "non-competitive special access services by price cap local exchange carriers." Among the three methods proposed by the Commission, they opine that the KLEMS model is the most suitable for the BDS industry and that the appropriate X-factor is 1.95 percent. *See* Declaration of Mark E. Meitzen and Philip E. Schoech, filed June 28, 2016, 1, 7–8, and Table 1.

[45] Declaration of David E. M. Sappington and William P. Zarakas, attached as Exhibit E to Sprint Comments, filed June

"enable[s] the Commission to craft regulatory rules that are both administratively feasible and reasonably attuned to prevailing variation in competitive conditions."[46] In particular, Professor Sappington believes that prevailing price cap regulation should be "updated to reflect prevailing industry conditions."[47] Professor Sappington and Mr. Zarakas discuss the merits of price cap regulation in particular and recommend lowering the price cap index and resetting the X-factor.[48]

(41) Although the details of how monopoly markets are regulated, if at all, are not central to my main points here, I comment on the recommendations of Professor Sappington and Mr. Zarakas in Appendix B.

(42) Very recently a submission by Mr. J. Scott Marcus on behalf of INCOMPAS purports to quantify the likely impact of (perhaps regulatory) price reductions on TDM and Ethernet-based "service provider revenues, welfare transfer, reduction in deadweight loss, and spill-over effects into the broader society."[49] Such claims could of course be made regarding any industry in which price exceeds marginal cost (as Mr. Marcus assumes, without analysis, is the case here). Thus, in addition to multiple other defects, his basic conclusion is not helpful for the Commission's task of understanding whether or where price regulation in BDS is appropriate. I offer further comments on Mr. Marcus's study in Appendix C.

28, 2016 [hereinafter "Sappington and Zarakas Decl."], ¶¶ 3–4.

46 Declaration of David Sappington, attached as Attachment 1 to Sprint's Reply Comments, filed Feb. 19, 2016 [hereinafter "Sappington Decl."], ¶ 27.

47 Sappington Decl., ¶ 31.

48 Sappington and Zarakas Decl.

49 *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, 8. It is worth noting that the INCOMPAS letter makes the claim, which is in no way substantiated by Mr. Marcus's paper, that "Competitive reform—that includes meaningful price reduction—in the business data services market will promote a 'virtuous cycle' of investment and development, because—as the Commission has found—competition spurs innovations by network providers, which drive end-user demand for more advanced broadband services, which in turn stimulates competition among providers to further invest in their broadband networks and the services offered over those networks." Letter from Karen Reidy, Vice President of Regulatory Affairs, INCOMPAS, to Tom Wheeler, Chairman, Federal Communications Commission (dated July 28, 2016) at 1. True competitive reform may indeed generate substantial benefits of the sort mentioned. But price reduction achieved through price regulation is not the same as competitive reform even if INCOMPAS calls it that, and is not likely to stimulate the virtuous cycle invoked by INCOMPAS.

IV. Many of the estimates of average price effects in this proceeding are not remarkable when compared to others from the economic literature and thus do not support price regulation in non-monopoly markets

(43) In this section I summarize the type and magnitude of incremental average price effects that Professor Rysman and others have estimated in this proceeding, largely taking the reported estimates of effects at face value. My primary focus here, as in Section II.A, is on the incremental effect of additional competitors once two firms are already competing. Extraordinarily large effects, reliably proven, would be one factor weighing in favor of price regulation, although I emphasize that they should be considered only in conjunction with many other factors. Effects estimated in this proceeding and in the economic literature are not always reported in a manner that allows one to make apple-to-apple comparisons, but to give a sense of the ranges involved, I collect a number of these estimates here.

(44) It is worth stressing that for the most part I defer my analyses of the reliability of these (especially Professor Rysman's) estimates until Section V and the related Appendix A. In general, however, these estimates do not appear to be of a magnitude that takes them outside the normal run of oligopoly price effects or that otherwise suggests the imposition of price regulation.

IV.A. Price effects estimated in this proceeding

IV.A.1. Incremental price effects estimated by Professor Rysman

(45) Professor Rysman's price regressions are summarized in seven tables,[50] each reporting results for up to six regressions. In some of these (e.g., Table 14) it is relatively straightforward to determine the effect on average log transformation of prices of the presence[51] of one or more competitors in the same Census block as the ILEC incumbent's customer. However, in none of them is it straightforward to determine the incremental effects of different numbers of competitors[52] to the ILEC beyond the first.

(46) For example, Professor Rysman's Table 17 has a variable indicating whether at least one competitor is in the same building as the ILEC's customer and another variable indicating whether there is at

[50] *See* Appendix Section A.1.b for additional related discussion.

[51] I use the word "presence" as short-hand for whether the facilities-based competitor reports an ability to serve a customer in a particular location.

[52] Because Professor Rysman analyzes ILEC prices only, the ILEC is always present in his price data (and may well also be ubiquitous in the markets). Following his approach, in this section and in the related discussions in Section V and Appendix A I use the word "competitor" to mean a competitor in addition to the ILEC. For example, "the presence of two competitors" means that there are two firms in addition to the ILEC.

least one competitor to the ILEC in the same Census block but not in the same building as the ILEC's customer. The effects of these two variables are assumed to be independent and cumulative in Dr. Rysman's specification, even though one expects that the effect of a competitor not in the building depends on whether there is already a competitor to the ILEC in the same building. It is also possible that the effect of a competitor in the building would depend on whether other competitors are already present nearby. Professor Rysman's specification in Table 17 restrictively excludes both possibilities.

(47) But even putting this important issue aside, one cannot tell what the incremental effect of adding a second competitor in Professor Rysman's specification is, because the incremental effect of a second competitor in that specification depends on where the second competitor is located relative to the first competitor. If they are both in the customer's building, or both not in the building, then Professor Rysman's specification is silent on the incremental effect from a second competitor (i.e., a third firm) in the market. But if one competitor is in the building and the other is not, then the incremental effect is not zero in this specification; it depends on whether one counts the competitor in the building as the second competitor and the other one as the third competitor, or the other way around. Similarly, it is impossible to determine the effect of a third competitor (fourth firm) without knowing where it is located relative to the ILEC's customer and the other competitors.

(48) Professor Rysman's Table 18 compounds the problems of interpretation of his Table 17 results by allowing for a third category of competitor location, namely in the same Census tract but not in the same Census block as the ILEC customer, but without resolving any of the issues already described. Under this specification, the estimated incremental effect from the presence of that competitor is now even more uncertain. The specification declines to comment on that effect if the two competitors' presences are located similarly relative to the ILEC customer, or it could be any of three other values, depending on the exact configuration of firm locations. Perversely, Table 18 sometimes shows a much larger effect of a competitor in the Census tract but not in the Census block than the effect of a competitor in the same building as the ILEC customer.[53]

(49) Incremental average price effects of additional competitors beyond the first non-ILEC competitor are estimated by Professor Rysman only in his Table 19.[54] This is the only table in his study in which the effect of competition is partly broken down by the number of competitors in a location. Specifically, this table generalizes his Table 17 results by allowing for different effects from different numbers of

[53] Professor Rysman's Table 18 reports results for a regression of DS3 prices using Census tract fixed effects. Results from that regression indicate that an effect on price of a competitor in the Census block but not in the building is almost twice as large as the effect of a competitor in the building, and that the effect of a competitor in the Census tract but not in the Census block or building is about three times as large as the effect of a competitor in the building. That is, his regressions appear (with whatever confidence or emphasis is conferred by their reported statistical significance) to show that the presence of competitors to the ILEC has *more of an effect* on DS3 prices charged by the ILEC when they are *farther away* from the ILEC's customer. This makes no sense as a matter of economics and likely indicates a severe model misspecification. Importantly, in the presence of such misspecification, none of the statistical significance claims are reliable, since the calculation of statistical significance relies on proper model specification.

[54] *See* Section V and Appendix A for comments on Professor Rysman's study.

competitors in the same Census block as the ILEC customer but not in the same building. However, it has many of the same problems already described for Table 17; thus the incremental impact of the number of competitors at the Census block level cannot be directly obtained from his reported results.

(50) Professor Rysman points out that "[f]ocusing on an indicator for competition in the same building rather than the number of competitors in the same building is natural because there are so few buildings with multiple competitors."[55] In Table 19 of his June white paper, he estimates that prices drop by around 5 percent when a facilities-based competitor can serve the building. But his model unrealistically assumes that this effect is independent of how many competitors are nearby but not in the building. Furthermore, it provides no guidance as to whether there are additional effects from multiple competitors in the building.

(51) Figure 1 shows estimates of the impact on ILEC price of additional competitors in the Census block but not the building, from Professor Rysman's Table 19 and from Attachment 2 of the FCC staff reports.[56] I only reproduce results from regressions with Census tract fixed effects, which is the only specification in Attachment 2 of the FCC staff reports, breaking down estimates by different regulatory areas. The estimated effects have been adjusted from those sources to reflect the *incremental* impact.[57] Note again that these estimates relate to competitors in the Census block but not the building, and they do not show the incremental effects of the indicated number of competitors in the Census block.

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55 Revised Rysman White Paper, 24.

56 Revised Rysman White Paper, Table 19; Federal Communications Commission Staff, "Distinguishing the Effects of Competition on ILEC Prices under Price Cap Only Regulation, Phase I Pricing Flexibility, and Phase II Pricing Flexibility," June 28, 2016, at Attachment 2, Table 19a and Table 19b, *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0708/DOC-340040A8.pdf.

57 The incremental impact has been derived as follows. First, to account for the fact that the dependent variable in each regression is the logarithm of price, using a standard formula, the estimated coefficients for the competition variables in each of the regressions were transformed by exponentiating each coefficient and subtracting one from the result. Next, given the way that the competition variables are defined, in some cases other adjustments need to be made to obtain the incremental impact. The estimated incremental percent impact on price of one additional competitor in the same Census block but not building as the ILEC customer is the (transformed, as described in the first step) coefficient on the variable: "One Facilities-Based Competitor is in the Block But Not the Building." The incremental percent impact of the second and/or third competitor(s) is the difference between the (transformed) coefficients on the variables "Two or Three Facilities-Based Competitors are in the Block But Not the Building" and "One Facilities-Based Competitor is in the Block But Not the Building." The incremental percent impact of the fourth and/or more competitor(s) is the difference between the (transformed) coefficients on the variables "Four or More Facilities-Based Competitors are in the Block But Not the Building" and "Two or Three Facilities-Based Competitors are in the Block But Not the Building."

Figure 1. Professor Rysman's estimates of the incremental impact on price of additional competitors in the Census block but not the building

Regression	Estimated percent impact on price of additional competitor(s) in the same Census block but not building as the ILEC customer		
	1st	2nd and/or 3rd	4th and/or more
DS1 Census tract FE (White paper, Table 19)	-1.8	-3.2	1.1
DS3 Census tract FE (White paper, Table 19)	-9.1	-5.2	1.9
DS1 Census tract FE, Phase I (Attachment 2, Table 19a)	-2.2	0.6	2.3
DS1 Census tract FE, Phase II (Attachment 2, Table 19a)	0.0	-7.0	1.1
DS3 Census tract FE, Phase I (Attachment 2, Table 19b)	-9.7	-4.8	9.8
DS3 Census tract FE, Phase II (Attachment 2, Table 19b)	-4.5	-3.2	-14.4

Note: FE stands for fixed effects.

(52) While this section primarily takes estimates of price effects at face value, I note briefly here that the pattern of estimates in Figure 1 is anomalous. Unless competition is strongly affected by some sort of price coordination, which appears unlikely, given the nature of the market, one would expect that the incremental impact of the first competitor is the largest; the next largest would be the impact of the second competitor, and so on. Moreover, I would expect all incremental price effects to be negative. Instead, according to the estimates shown in Figure 1, the average price impact of incremental facilities-based competitors in the same Census block (but not building) may be either positive or negative, and the largest estimated negative effect (14.4 percent) is for a fourth and/or subsequent competitor.

(53) That said, the general magnitude of price effects of additional competitors reported in Figure 1 is within the normal run of ordinary oligopoly effects from more competitors, as I discuss in Section IV.C. In oligopoly markets generally we are alert to opportunities to better protect competition, but except for monopolies (and by no means always for monopolies), few economists would seriously suggest price regulation.

(54) Moreover, if the Commission were inclined to try to reproduce in (say) duopoly markets the pricing that Professor Rysman's study suggests is seen on average in markets with more competitors, the most relevant part of Figure 1 would be the last column, in which five of the six entries suggest a price *increase* from additional competitors (and the sixth, as just noted, is anomalous).

IV.A.2. Incremental price effects estimated by other commenters

(55) Other commenters' submissions provide assessments of incremental price impacts, with their own caveats and problems.[58] Overall, the findings are inconclusive and consistent with Schmalensee's

[58] In Section V and Appendix Sections A.4 and A.5, I comment on some issues related to some of the approaches used to

(1989) observation that "price studies that search for critical concentration ratios [i.e., the concentration at which the market becomes competitive] obtain mixed results."[59]

IV.A.2.a. Price effects estimated by Dr. Frentrup

(56) Based on Sprint's bidding data, Dr. Frentrup reports that the first competitor {{ }}.[60]

IV.A.2.b. Price effects estimated by Professor Baker

(57) In his January 27 submission on behalf of Level 3 and Windstream, Professor Baker finds that the incremental impact of the second and third in-building provider (first or second in-building competitors) are statistically and economically insignificant for his preferred specification.[61] Across specifications, these effects may be insignificant, statistically significant and positive, or negative. In-building, the combined effect of four or more providers is to lower price by around 12 percent, but again this finding is not stable across specifications.[62] Professor Sappington also references this result, along with results from two additional specifications from Professor Baker's January 27 submission (Professor Sappington does not explain his choice of those two).[63]

(58) Professor Baker considers "nearby" providers in addition to in-building providers, where nearby providers are not in the building, but are either in the same Census block or in a Census block with a boundary less than 0.5 miles away.[64] However, if one takes the market to be at the "nearby" level, rather than the building level, similar issues with regard to interpreting coefficients arise as in Professor Rysman: it is difficult to know the incremental impact of competitors when considering in-building and nearby competitors together.[65]

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generate the estimated price effects reported in this section. Here, as in the previous section, I largely take the estimated effects at face value.

59 Richard Schmalensee, "Inter-Industry Studies of Structure and Performance," in *Handbook of Industrial Organization*, Vol. II, eds. Richard Schmalensee and Robert D. Willig, 951–1009 at 988 (Amsterdam: North-Holland, 1989).

60 Frentrup Decl., ¶¶ 4, 7–10.

61 Baker January Decl., Table 2.

62 Baker January Decl., Table 2.

63 Sappington Decl., ¶¶ 20–21. Professor Sappington chooses to call-out the DS3 and 1 Gbps or more specifications. The DS3 price effect is the highest across all "type of service" specifications. The 1 Gbps or more price effect has conflicting results based on the number of providers present (i.e., two or three in-building providers result in price increases. Therefore, the negative price effect Professor Sappington reports is driven by only the four (or more) in-building providers price effect.) *See* Baker January Decl., Table 2.

64 Baker January Decl., ¶ 43.

65 *See* Declaration of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, attached as Attachment A to AT&T's Reply Comments, filed Feb. 19, 2016, ¶ 35 and Supplemental Declaration of Mark Israel, Daniel Rubinfeld, and Glenn Woroch, filed March 24, 2016 [hereinafter "IRW March Decl."], ¶¶ 21–23 for a discussion of problems interpreting Professor Baker's results similar to my commentary about Professor Rysman's results.

(59) The incremental effects of any in-building or any nearby provider on price are often small, sometimes positive, and very dependent on the regression specification.

(60) In his June 28 submission on behalf of Level 3 and Windstream, Professor Baker finds that for high-bandwidth connections the incremental price decrease resulting from one or more in-building, or in-Census block high-bandwidth rivals may range from around 2 percent (statistically insignificant) up to 8 percent (statistically significant). Professor Baker's estimates of the incremental price effects of one, two, three, and four or more competitors vary widely.

IV.A.2.c. Price effects estimated by Mr. Zarakas and Dr. Verlinda

(61) In their June 28 submission on behalf of Sprint, Mr. Zarakas and Dr. Verlinda find that prices for major high-bandwidth products sold by {{ }} are "between 8.5 percent and 25 percent lower when there are at least three facilities-based competitors in the census block."[66] However, these findings, which are based on regression results reported in their Table 3, are erratic—for some levels of competition, the incremental impact is {{ }}. For example, {{

}}.[67]

(62) In Mr. Zarakas and Dr. Verlinda's Table 2b, which reports median prices, adding a competitive provider in the Census block, when starting from monopoly, {{

}}.[68] This finding is in direct conflict with their Table 3 regression results, which suggest a {{ }}, however.[69]

IV.B. "Implausible and uninformative" incremental price effects reported by other commenters

(63) Generally, the estimated price effects noted above are in the general range of estimates in the economic literature for industries that few if any economists would support price-regulating, but there are some larger estimates in the record. In general, as I explain next, those are reported from analyses that—taken as a whole—do not command confidence.

(64) In his June 28 declaration, Professor Baker states that "the presence of four or more in-building and four or more in-Census block high-bandwidth rivals lowers the prices of high-bandwidth connections

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66 Kwoka Decl., ¶ 33, citing to Zarakas and Verlinda Decl., Table 3.

67 Zarakas and Verlinda Decl., Table 3. The figure of {{ }} is obtained using the coefficient estimate of {{ }} in column [5] and transforming the value so it can properly be interpreted as an exact percentage effect: exp({{ }}) – 1 = {{ }}.

68 Zarakas and Verlinda Decl., Table 2b.

69 Zarakas and Verlinda Decl., Table 3.

by 43% according to one estimate and by 25% according to another."[70] This is stated even more strongly in his July 20 letter to the FCC.[71] However, referring back to Professor Baker's results reveals the sometimes contradictory details of his results. For example, in the regression that generates the 43 percent estimate,[72] the effect of the first nearby competitor, and first two nearby competitors, is to *increase* price. In the model that generates a 25 percent estimate,[73] the effect of the first two nearby competitors is almost equal to 0. Alongside the fact that a vast majority of the data come from markets with one or two nearby competitors, these findings cast doubt on the reliability of the overall figures.

(65) Professor Sappington also calls out several results from Professor Baker's January 27 submission that seem to indicate a large incremental impact of competition.[74] He notes that "Dr. Baker estimates that the presence of four or more in-building providers reduces the prices the ILECs charge for DS3 service by approximately 45.28 percent" and that "the presence of four or more in-building providers reduces the prices that ILECs charge for Ethernet service with speeds of at least 1 gigabit per second by approximately 25.32 percent."[75] Yet in the latter example, the entire result comes from the estimate of the impact of the fourth (or more) in-building provider. The second and third providers, which economists would expect to have the biggest competitive effect, are actually estimated to increase price.[76] In the example of the DS3 service, again the impact of the fourth (or more) in-building provider is larger than even the combined impact of the second and third providers, and the impact of the first nearby competitor is to *increase* price by around 10 percent.[77]

(66) In his declaration, Professor Kwoka discusses the price effects in Table 2b of Mr. Zarakas and Dr. Verlinda's declaration. Professor Kwoka notes that the median price of {{

}}.[78]

For {{

}}[79] Yet, for {{

[70] Baker June Decl., ¶ 3.

[71] Letter from Jonathan B. Baker to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 16-143, 15-247, & 05-25, RM-10593 filed July 20, 2016, 1–2.

[72] Baker June Decl., Table 1, column (8). As stated in n. 29 of his June declaration, the results referenced by Professor Baker have been obtained by converting the sum of the regressions coefficients reported in column (8) into percentage changes using the formula [exp(cumulative sum of coefficients) – 1] * 100.

[73] Baker June Decl., Table 1, column (7). As stated in n. 29 of his June declaration, the results referenced by Professor Baker have been obtained by converting the sum of the regressions coefficients reported in column (8) into percentage changes using the formula [exp(cumulative sum of coefficients) – 1] * 100.

[74] Sappington Decl., ¶ 21.

[75] Sappington Decl., ¶ 21.

[76] Baker January Decl., Table 2.

[77] Baker January Decl., Table 2.

[78] Kwoka Decl., ¶ 29.

[79] Kwoka Decl., ¶ 29.

}}.[80] Professor Kwoka acknowledges that "these data are noisy," and goes on to say that "in a few cases higher price appears to be associated with a greater number of competitors," but suggests that this "must be seen as an implausible and uninformative result."[81] I agree, but simply discarding the most visibly anomalous results among an erratic collection is not a good solution. In fact, of the 14 provider-bandwidth combinations cited, there are {{ }}. When so many of the results of a particular approach are so plainly anomalous, one should surely question all conclusions drawn from this approach.

(67) Finally, Professor Kwoka also notes the findings of Mr. Ed Carey, who cites {{ }}, respectively stated and inferred to be offered in buildings where other providers are present.[82] For {{ }}, prices are around {{ }}, while {{

}}.[83] However, even if we accept these results as presenting valid price comparisons, they still only tell us that monopoly markets price {{ }} than non-monopoly markets and do not tell us anything about the incremental price effects of additional competitors beyond the second, which is the relevant topic for discussion of price regulation in non-monopoly markets.

IV.C. Price effects estimated in the economic literature

(68) It is instructive to compare the incremental effects estimated by Professor Rysman and other commenters (other than the "implausible and uninformative" ones) with those in the economic literature, treating the latter as a benchmark for corresponding price effects in industries in which price regulation is not normally even contemplated. The examples listed below suggest that the effects estimated by Professor Rysman and other commenters, even if reliable, would not be extraordinarily large compared to those benchmarks.

(69) Kwoka (2015) reports 23 "specific findings" based on his study of the merger retrospectives literature. Many of the summary statistics that he reports indicate typical price increases of around 5 percent or higher from a loss of one competitor in the studied mergers, with plenty of higher estimates.[84]

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80 Kwoka Decl., Table 1.

81 Kwoka Decl., ¶ 28.

82 Kwoka Decl., ¶¶ 34–37.

83 Kwoka Decl., ¶¶ 34–37 citing to Declaration of Ed Carey, attached as Exhibit C to Sprint Comments, filed June 28, 2016, Table 1.

84 John Kwoka, *Mergers, Merger Control, and Remedies. A Retrospective Analysis of U.S. Policy* (Cambridge, MA: The

(70) Among specific studies one might mention:

- Analyzing the proposed 1997 Staples–Office Depot merger (cited by Professor Rysman as broadly parallel to his analysis), economists estimated that, on average, prices would increase around 8 percent in response to the elimination of one competitor in the office supplies superstores market.
  - Ashenfelter et al. (2013) show that using their preferred specification, the effect of eliminating Office Depot stores raises Staples prices by 8.6 percent.[85]
  - Dalkir and Warron-Boulton (2014) report that the FTC's average estimated effect of the merger in two- and three-firm markets where both firms were present was to increase price around 7.3 percent.[86]
  - Baker (1999) reports that the average price effect of the merger simulated by the FTC was between 7.1 percent and 7.6 percent increase, depending on the modeling approach used.[87]
  - Dalkir and Warron-Boulton (2014) show that when comparing raw price data across markets, Staples prices were 11.6 percent higher in monopoly markets than those in which Office Depot was present, and Office Depot's prices were 8.6 percent higher when that chain was a monopoly as compared to when it competed with Staples. Price effects were lower when other competitors were also present.[88]
- Ashenfelter and Hosken (2010) analyze five consumer product mergers where the merging parties had combined revenue market shares between 32 percent and 44 percent.[89] They estimated that price increases from these mergers were between 3 and 7 percent and "might be considered relatively modest."[90]
- Ashenfelter et al. (2013) retrospectively assess the impact of the 2006 merger between Whirlpool and Maytag, which affected a number of major home appliance categories,[91] and estimate that

MIT Press, 2015), § 10.2.

85 Orley Ashenfelter, et al., "Empirical Methods in Merger Analysis: Econometric Analysis of Pricing in *FTC v. Staples*." *International Journal of the Economics of Business* 13 (2006): 265–79 at 272.

86 Serdar Dalkir and Frederick R. Warren-Boulton, "Prices, Market Definition, and the Effects of Merger: Staples–Office Depot (1997)," in *The Antitrust Revolution,* 6th ed., eds. John E. Kwoka Jr. and Lawrence J. White, 166–93 at 176 (New York: Oxford University Press, 2014).

87 Jonathan B. Baker, "Econometric Analysis in *FTC v. Staples*," *Journal of Public Policy & Marketing* 18 (1999): 11–21 at 16.

88 Serdar Dalkir and Frederick R. Warren-Boulton, "Prices, Market Definition, and the Effects of Merger: Staples–Office Depot (1997)," in *The Antitrust Revolution,* 6th ed., eds. John E. Kwoka Jr. and Lawrence J. White, 166–93 at 175–76 (New York: Oxford University Press, 2014).

89 Orley Ashenfelter and Daniel Hosken, "The Effect of Mergers on Consumer Prices: Evidence from Five Mergers on the Enforcement Margin," *Journal of Law and Economics* 53 (2010): 417–66 at Table 2.

90 Orley Ashenfelter and Daniel Hosken, "The Effect of Mergers on Consumer Prices: Evidence from Five Mergers on the Enforcement Margin," *Journal of Law and Economics* 53 (2010): 417–66 at 418.

91 Orley C. Ashenfelter, Daniel S. Hosken, and Matthew C. Weinberg, "The Price Effects of a Large Merger of Manufacturers: A Case Study of Maytag-Whirlpool," *American Economic Journal: Economic Policy* 5 (2013): 239–261

prices of Whirlpool dryers increased by up to 17 percent post-merger, and that the price of Maytag dishwashers increased by about 7 percent.[92]

- Farrell, Pautler, and Vita (2009) report post-merger price effects for four hospital mergers based on retrospective analysis:[93]
  - Evanston Northwestern/Highland Park (2000): Estimates of post-merger price increases tend to be large, positive, and statistically significant, as low as 11 percent and as high as 65 percent.
  - St. Therese/Victory (2000): Estimates of post-merger prices changes varied, depending on the insurer analyzed. Two insurers experienced post-merger price increases and three experienced price decreases. The estimates ranged from -21 percent to 28 percent.
  - Sutter-Summit (1998): Using the difference-in-difference method, the estimate of post-merger price increases for Summit ranged from 23 percent to 50 percent and were statistically significant at the 0.06 level or better. The estimate of post-merger price changes for Sutter (Alta Bates Medical Center) were not statistically significant and ranged from -9 percent to 7 percent.
  - New Hanover/Cape Fear (1998): Estimates of post-merger price changes varied by insurer. Two insurers experienced large, positive, and statistically significant estimates (57 percent and 65 percent), whereas one insurer had a large, negative, and statistically significant estimate (-30 percent). The final insurer in the study had a positive estimate (7 percent), but it was not statistically significant.
- Reiffen and Ward (2005) estimate a structural model for generic drugs and find that prices start at around 20–30 percent above long-run marginal cost for a generic monopolist and fall with increasing number of competitors, but remain above long-run marginal cost until there are 10 or more competitors.[94]
- Hungria-Gunnelin (2013) uses a hedonic pricing model to empirically test whether in English auctions the number of bidders affects the sales price of condominium apartments in Stockholm, Sweden.[95] She finds that the "effect of the number of bidders . . . is strongly economically

Table 1 at 246. In contentious markets (dishwashers, clothes dryers, refrigerators, and clothes washers), the combined market share of Whirlpool and Maytag ranged from 50% to over 60%: they, together with GE and Electrolux, were major players, though many smaller brands also existed.

92 Orley C. Ashenfelter, Daniel S. Hosken, and Matthew C. Weinberg, "The Price Effects of a Large Merger of Manufacturers: A Case Study of Maytag-Whirlpool," *American Economic Journal: Economic Policy* 5 (2013): 239–61 at 252 and Table 3 at 253.

93 Joseph Farrell, Paul A. Pautler, and Michael G. Vita, "Economics at the FTC: Retrospective Merger Analysis with Focus on Hospitals," *Review of Industrial Organization* 35 (2009): 369–85.

94 David Reiffen and Michael Ward, "Generic Drug Industry Dynamics," *Review of Economics and Statistics* 87 (2005): 37–49 at 38.

95 Rosane Hungria-Gunnelin, "Impact of Number of Bidders on Sale Price of Auctioned Condominium Apartments in Stockholm," *International Real Estate Review* 16 (2013): 274–95 at 277.

significant. Starting at one bidder, the increase in price when adding one more bidder is 3.9 percent and the corresponding increase when going from five to six bidders is 1.9 percent."[96]

- In an application to tire retailers in rural areas, Bresnahan and Reiss (1991) find that "between monopolies and quintopolies, price falls by about 8 percent on average."[97] They also find that "price falls another 20 percent" from markets with five firms to urban markets.[98]

(71) This is only a selection but I believe it conveys the right overall conclusion: estimated price effects from the loss, or addition, of a competitor in imperfectly competitive markets are often at least comparable with the estimates by Professor Rysman and other commenters for BDS.[99] It would be startling to suggest that those estimates provide a rationale for regulating prices in non-monopoly markets.

[96] Rosane Hungria-Gunnelin, "Impact of Number of Bidders on Sale Price of Auctioned Condominium Apartments in Stockholm," *International Real Estate Review* 16 (2013): 274–95 at 287.

[97] Timothy F. Bresnahan and Peter C. Reiss, "Entry and Competition in Concentrated Markets," *The Journal of Political Economy* 99 (1991): 977–1009 at 1006.

[98] Timothy F. Bresnahan and Peter C. Reiss, "Entry and Competition in Concentrated Markets," *The Journal of Political Economy* 99 (1991): 977–1009 at 1006.

[99] *See, e.g.*, John Kwoka, *Mergers, Merger Control, and Remedies. A Retrospective Analysis of U.S. Policy* (Cambridge, MA: The MIT Press, 2015) § 10.2 for a summary of general magnitudes of price effects of studied horizontal mergers.

V. Comments on Professor Rysman's and other estimations of price effects

(72) In this section, and in the closely related Appendix A, I offer some comments on the statistical analysis of prices performed by Professor Rysman, with a few comments on other such analyses in the record. I have not attempted to systematically study every issue in every econometric study submitted in this proceeding. The Commission should note that many of the comments made here apply more broadly to studies other than the ones discussed here, including the FCC Staff Report.

(73) My goal in this section is to focus on problems of statistical inference and measurement rather than of policy. Among the statistical issues, however, I stress those that are especially on point for the possibility, as suggested in the FNPRM, that the Commission might be inclined to rely on Professor Rysman's analysis as a basis for imposing price regulation on BDS markets other than ILEC monopolies. In some places I assume that the relevance for that policy idea is obvious; in others, I briefly explain it.

(74) In general terms, with more detailed discussion in Appendix A, I offer the following observations:

- Professor Rysman's results provide too little guidance for diagnosing inadequately-competitive non-monopoly markets.
- How Professor Rysman measures competitor presence is problematic, and also does not mesh well with the Commission's proposed Competitive Market Test.
- Professor Rysman's study is unable to establish causality of price effects.

(75) For the reasons identified here and in my June 2016 Declaration, Professor Rysman's analysis provides little or no support for the notion that the Commission might sensibly regulate the prices of BDS competitive providers.

V.A. Professor Rysman's results provide too little guidance for diagnosing inadequately competitive non-monopoly markets

(76) Professor Rysman's price analysis provides too little guidance for diagnosing inadequately competitive non-monopoly markets, as contemplated in the FNPRM discussion of the proposed Competitive Market Test. It is not clear that this problem is solvable using the available data. The Competitive Market Test would identify "noncompetitive" markets to be subjected to price regulation. Fundamentally, therefore, the goal and the criterion must be some degree of *accurate diagnosis*. Mere *correlation* between a diagnostic, such as number of competitors present, and a feature of the market, such as higher prices, that might be related to the merits of regulation, is

fundamentally not enough, because correlation can—and in this case likely does—coexist with a high error rate in any attempt at prediction of (here) prices based on competitive presence, even combined with other potentially predictive variables.

(77) Past efforts to apply a regulatory screen at the Metropolitan Statistical Area (MSA) level have proven unsuccessful, but there is no reason to expect that looking at finer levels of geography will solve the problem: unless the variables used to construct the screen are highly predictive of noncompetitive markets, then there is a risk of false positive findings that markets are "noncompetitive."

(78) Professor Rysman's analysis falls short as a diagnostic tool in two respects.

(79) First, as discussed in Appendix Section A.1.a, while Professor Rysman finds statistically significant correlations between his measures of competition and ILEC prices, his statistical predictions of ILEC prices leave a great deal of unexplained variation. In other words, his model overall simply does not predict prices very well, and his measures of competition contribute proportionally very little to even that imperfect prediction. While this pattern is consistent with a world in which competition as measured has a systematic effect but many other effects are operating independently, it would be equally consistent with a world in which competition as measured has an effect only occasionally and unsystematically, or with a world in which competition is in fact an important determinant of price but is only modestly correlated with Professor Rysman's measure of competition. The poor predictive performance of Dr. Rysman's competition variables could arise from many causes, including lack of variation within many Census tracts or a failure to account for cost variation that likely is present within Census tracts or counties.

(80) Whatever the cause, it is clear that Professor Rysman's competition variables do not *predict* ILEC prices well, so even if the findings of *correlation* were impeccable, there is a substantial risk of false positive findings that markets are "noncompetitive" if the Commission bases its proposed test on these or similar variables. Use of the "wrong" measure of competition in imposing regulated prices would inevitably lead to many harmful errors, and so would even the use of the "right" measure of competition when so much other variation exists.

(81) Second, even to the extent that a well-established correlation between an appropriate measure of competition and prices would usefully inform regulatory policy, Professor Rysman's analysis appears primarily focused on establishing whether prices in monopoly markets are higher than those in non-monopoly markets as a whole, not on analyzing whether, for instance, prices in duopoly markets are higher than those in three-firm markets.

(82) This is in part a matter of the data: there are relatively few markets in which Professor Rysman identifies the presence of more than two firms. But it is also reflected in his primary use of an indicator variable distinguishing monopoly markets versus all others. Only in his Table 19 does he

explore differences in prices among non-monopoly markets, and even aside from the relative paucity of data, there are problems with the way in which he addresses this (see Section IV.A.1 and Appendix Section A.1.b).

V.B. Problems with how Professor Rysman measures competitor presence

(83) There are several problems in this category, as discussed in Appendix Section A.2, especially for purposes of constructing the Commission's proposed Competitive Market Test. For that purpose, the criterion for evaluating a particular way of measuring competition is whether it reliably makes the right distinctions about the presence of durable market power rather than whether it can identify a significant difference in average prices. As noted above, a statistically significant difference in averages does not imply any level of accuracy in prediction.

(84) There are at least three problems with how Professor Rysman measures competitor presence. First, he does not measure competition along the lines proposed by the Commission, so his results are not directly informative about the Commission's proposed test. Second, the evidence is weak that a Census block is the best (or even a good) geographic unit of analysis. Third, his regressions do not account for UNE-based competitors or account for any price effects from UNE-based competition.

(85) The Commission should not presume that *any* method for counting competitors will be reliable for purposes of a Competitive Market Test. Other criteria might well be needed, as modern merger policy and competition policy stress.

V.C. Professor Rysman's causality conclusions rest on unsupported assumptions

(86) As discussed further in Appendix Section A.3, Professor Rysman's causality conclusions rest on unsupported assumptions, including an assumption that his fixed effects approach fully controls for the effect of costs on price. If this assumption is wrong—and there is some reason to believe that it is—then the failure to fully control for costs likely biases Professor Rysman's analysis of price effects from competition in the direction of finding such price effects.

(87) To reliably determine a causal effect of competition on prices, one must control for other influences that may be correlated with competition. But controlling for noncompetition determinants of price (e.g., costs) without observing them is demanding and inherently rests on untestable assumptions in a non-experimental setting. One should not assume that a "natural experiment" has occurred just because there is some variation in competition: neither Professor Rysman nor the other economists who have submitted analyses in this proceeding have offered any evidence that "nature" has

randomized the assignment of competition to Census blocks, as would occur in an experimental setting.

(88) On the contrary, there is good reason to believe that variation in competition, even within Census tracts or counties, is correlated with variation in costs, and since costs also drive pricing to some extent, failure of Professor Rysman's fixed effects method to fully control for costs likely causes biases of the sort previously mentioned. Appropriate use of panel data, as was employed in the *Staples* case that Professor Rysman cites to justify his methodology, could have helped address this possibility. Unfortunately, the Commission did not collect suitable data required to implement the "difference-in-differences" method that was prominent in *Staples* and more generally in the economics literature on analysis of competitive events affecting prices.

V.D. Further comments on the analyses of Dr. Frentrup and Professor Baker

(89) As discussed in Appendix Sections A.4 and A.5, Professor Baker and Dr. Frentrup also offer regression analyses of incremental price effects.

(90) Dr. Frentrup's analysis relies on outdated data for a very limited set of BDS products. Furthermore, his characterization of variation in the number of bidders for cell backhaul as a "natural experiment" is unsupported and likely incorrect, because generally one would expect that bidding participation and the winning bid are jointly determined.

(91) While Professor Baker argues that price regressions may underestimate a negative relationship between prices and competition, his examples and arguments selectively focus on sources of potential bias that point in that direction while ignoring arguments that suggest opposite biases. In addition, some of his arguments simply point out that regressions may understate the negative relationship for some customers/locations while ignoring that they overstate the relationship for other customers/locations.

VI. Conclusion

(92) While the FNPRM asks a great many questions, I have tried to focus my comments on one startling question: whether perhaps the Commission should regulate prices of competitive (non-incumbent) BDS providers in non-monopoly markets.

(93) To justify such a proposal, the Commission would presumably point to clear evidence of major competitive failure in most of the non-monopoly markets in which the Commission contemplates price regulation—failure of a kind that goes well beyond ordinary imperfections of workable competition and that would be strongly ameliorated by realistically feasible price regulation without undue unintended consequences for entry, innovation, and other aspects of market performance. It would presumably further point to evidence that regulating prices for both incumbents and entrants would outperform the more intuitive idea of regulating only incumbents' prices.

(94) Instead, much of the discussion, both from the Commission and from commenters, has explored whether there is a relationship on average between the incumbent's pricing of BDS and the number of BDS providers present.

(95) The econometric study (Professor Rysman's) sponsored by the Commission does not use the Commission's proposed measure of competitive presence, focuses primarily on differences in average prices between monopoly markets on the one hand and all non-monopoly markets lumped together on the other, and in the end acknowledges a great deal of unexplained variation in pricing, making its use in price regulation highly problematic.

(96) Leaving aside the many econometric issues in that discussion, finding such a relationship would be unsurprising in the economics literature or in antitrust experience and would not normally be seen as a reason to call for price regulation. It is unclear why the Commission hints at such an interventionist approach in BDS, especially given features of BDS that would likely make widespread price regulation particularly difficult and risky.

(97) For these reasons I urge the Commission to avoid rapid expansion of price regulation in BDS and to focus on removing barriers and disincentives to beneficial new entry.

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Appendix A. Detailed comments on econometric measurement of average price effects and related issues

A.1. Professor Rysman's results provide too little guidance for diagnosing inadequately competitive non-monopoly markets

(98) The Commission seeks guidance on how to construct a Competitive Market Test that would determine where the Commission would impose price regulation rather than rely on the preferred mechanism of competition. As I argued in my June 2016 Declaration, a case might be made that it is appropriate to regulate the pricing of a secure monopolist in some circumstances, although the BDS market may well be one in which doing so effectively is particularly difficult.[100]

(99) However, the Commission appears to be contemplating price regulation even in some (perhaps many) areas where competitive providers are present.[101] Price regulation will deter entry into these areas, especially if it brings lower prices; for this reason the Commission is wise to prefer competition over price regulation as a general principle. Before giving up on competition in areas where some competition is present already or likely to emerge, one would like to know how much competitor presence is needed, absent price regulation, to achieve whatever pricing outcome the Commission has in mind.

(100) For the reasons identified in my June 2016 Declaration, price regulation is apt to do more harm than good in areas where market power is limited or fragile.[102] Therefore, there is a real risk of harm from price regulation if the Commission adopts a test with a high rate of false positive findings of substantial, durable market power; and this is a problem with unbiased but unreliable diagnostics, as well as with biased diagnostics.[103] This risk is especially present in areas already served by more than

[100] Farrell Decl., ¶ 53.

[101] For example, the FNPRM asks, "Should we require more than two facilities-based competitors in any area for a competitive trigger?" FNPRM, ¶ 294.

[102] Farrell Decl., § VI.

[103] Much of the discussion below stresses the lack of good fit to the data within the model(s) and the potential for such false positives resulting from possible biases. I would suggest that at this stage of the analysis, the resulting cumulative uncertainty is the main takeaway. The point of the bias discussions is to caution the Commission about relying too much on this kind of empirical work. The Commission should look more "under the hood" about how competition works in this market—a point also made by Professor Sweeting. *See* Andrew Sweeting, Review of Dr. Rysman's "Empirics of Business Data Services" White Paper, April 26, 2016, ¶ 27, *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A4.pdf. ("[T]here are scenarios under which [Professor Rysman's] conclusions might be invalid, or at least limited to small sub-groups of customers. These scenarios include unobserved heterogeneity across geographical areas that is correlated with variation in competition; correlation across customers that, because it is ignored, is leading to standard errors that are too small; heterogeneity in how telecommunications providers and end user customers shop for BDS; and variation in the terms and conditions of BDS services that are created by competition but may not necessarily benefit customers (for example, being locked into

one company. However, even in areas where initially no competitors are present, if an initially accurate classification as a monopoly market is not promptly revised upon entry, that would create a misclassification.

(101) The Commission has acknowledged that its past efforts to identify areas with substantial market power based on characteristics of MSAs have not been satisfactory,[104] and the Commission now proposes a new framework based on smaller geographic areas.[105] But merely looking at finer levels of geography will not solve the problem of reliably distinguishing areas where competition is working from those where it is not if market power is not very highly correlated with the finer geographic measures (e.g., number of competitors in an area) proposed as a proxy measure for identifying market power. If the correlation is not high, then use of proxy variables likely will lead to a high rate of false positive findings of substantial market power.

(102) As explained further in Appendix Section A.1.a, Professor Rysman's study indicates that the variables he looks at, including competitor presence in a Census block, do not explain prices well and thus are unlikely to reliably distinguish areas with substantial market power from areas with little market power. Furthermore, as explained in Appendix Section A.1.b, his models provide little guidance for answering questions such as whether there is likely to be any benefit from price regulation in areas that have two firms already, or from price regulating a new entrant into a monopoly area.

A.1.a. Competitor presence does not predict prices well in Professor Rysman's regressions, and reliance on this measure is problematic

(103) Suppose that the average price across markets with fewer competitors is modestly higher than the average in markets with more competitors but that the difference in these average prices is small compared to the overall variability in prices. Then the markets with fewer competitors likely include numerous areas where prices are already low, even compared to markets with more competitors that are otherwise similar. Those low-price few-competitor markets may be ones where, notwithstanding the small number (e.g., two) of competitors, little or no market power is present (e.g., they may be ones where customers are particularly well placed to play the two rivals off against each other, or where customers have a credible self-supply threat). If that is the case, a decision to regulate prices in

longer contracts). The additional data analyses that I have suggested would allow the FCC to investigate these issues more thoroughly.")

[104] FNPRM, ¶ 28. ("[T]he Commission found that 'MSAs have generally failed to reflect the scope of competitive entry' and 'in many instances, the scope of competitive entry has apparently been far smaller than predicted.'") Citing to the *Special Access for Price Cap Local Exchange Carriers; AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket No. 05-25, RM-10593, Report and Order, 27 FCC Rcd 10573, para. 35 (2012) (*Suspension Order*).

[105] FNPRM, § V.A.7.b. ("The Geographic Market is Likely Larger than the Average Census Block in which there is BDS Demand, but Considerably Smaller than the MSA.")

the former group is likely to impose price regulation on markets with substantial competition, despite a low measured number of competitors.

(104) My analysis of Professor Rysman's regressions indicates that this situation is far from hypothetical. Regression coefficients reveal differences in average prices, but to examine whether these differences tell a full story about prices one must look at how well the regression explains patterns of variation in the data. Professor Rysman used a "fixed effects" regression approach that essentially looks only at variation within each Census tract or county as the basis for estimating the effects of competition on price. Within that framework, therefore, the appropriate way to look at how well his regressions perform is to examine how well they explain price variation within Census tracts or counties. Focusing on his Table 14, I calculated the R-squared statistic for each of the regressions in that table as well as for a modified regression that included only the fixed effects and no other variables.[106] These are reported in columns [2] and [3] of Figure 2. Column [3] of Figure 2 shows that while the fixed effects explain some of the variation in prices, the R-squared statistics are always less than 0.5 this indicates that on average there is more variation within Census tracts or counties than there is between these groups. The R-squared from fixed effects only is especially low (0.22 or less) when county fixed effects are used, reflecting the fact that there are many fewer counties than Census tracts.

Figure 2. R-squared analysis of Professor Rysman's Table 14 regressions

Regression	Number of Census tracts or county FE [1]	R-squared of full Regression [2]	R-squared of regression with FE only [3]	Percent of log(price) variation explained by additional variables [4] = ([2] - [3])*100%	Percent of log(price) variation within Census tracts/counties explained by additional variables [5] = [4] / (1 - [3])
DS1 Census tract FE	40,541	0.352	0.342	1.0%	1.5%
DS3 Census tract FE	8,904	0.325	0.323	0.2%	0.3%
Highband Census tract FE	9,987	0.562	0.491	7.1%	13.9%
DS1 county FE	740	0.181	0.151	3.0%	3.5%
DS3 county FE	634	0.125	0.117	0.8%	0.9%
Highband county FE	603	0.350	0.218	13.2%	16.9%

Note: FE stands for fixed effects.

[106] I could not perfectly replicate the Rysman regressions due to limitations of available data in the Secure Data Environment. Here and in the remainder of this Appendix, I instead rely on, and extend, Professor Mayo's replication of Professor Rysman's regressions. For reasons discussed by Professor Mayo, I believe that he substantially replicated Professor Rysman's regressions and that the analysis of this section would be little different if I had access to all of Professor Rysman's files. *See* Declaration of John W. Mayo, attached as Exhibit B to Comments of Comcast Corporation, filed June 28, 2016, ¶ 68 and n. 74.

(105) Notably as reported in column [4] of Figure 2, the R-squared is across the board not reduced very much when we omit all of Professor Rysman's variables except the fixed effects. This tells us that the other variables, including the competition variables, have very little power to predict prices beyond those of the fixed effects. The additional variation in price[107] incrementally explained collectively by all of the other variables in Professor Rysman's regressions, including competitor presence, is never more than 13.2 percent of the overall variation, and is far less than that for the DS1 and DS3 regressions, especially when Census tract fixed effects are used.

(106) Comparing these numbers also tells us that most of the price variation within Census tracts or counties is not explained by the variables that Professor Rysman includes in his regressions. This percentage (see column [5] of Figure 2) is the percentage of price variation within Census tracts or counties that is explained collectively by the additional variables. At most, 3.5 percent of the "within" variation in DS1 and DS3 prices is explained by competitor presence and Professor Rysman's other variables. In short, while Professor Rysman does find statistically significant differences in the average price of DS1 or DS3 service, depending on whether a competitor is present in the same Census block, these differences in the average price are small compared to the overall variation in prices within each Census tract or county. The situation is somewhat better for high-bandwidth services, but even then the percentage of "within" Census tract or county price variation explained by Professor Rysman's variables is only 14–17 percent.

(107) Put differently, if the Commission decides to regulate prices in every Census block where no competitor is present (other than the ILEC), then price regulation will apply to many areas where 2013 prices were actually lower than in many Census blocks with additional competitors; this would remain true even after adjusting prices for the effects of all of the other variables that Professor Rysman used. False positives in diagnosing market power or in imposing regulation are likely to be common, given this fact pattern.

(108) The "fixed effects only" results in Figure 2 apply also to Professor Rysman's Tables 15–20, since these differ from his Table 14 only in the set of additional variables used. Furthermore, the adjusted R-squared statistics reported by Professor Rysman in each column of his Tables 15–20 are essentially the same as those reported in the corresponding column of his Table 14.[108] Therefore, I would expect

[107] In this discussion I use the word "price" as a proxy for the logarithm of price, which is the variable that Professor Rysman actually analyzes in his regressions. However, this makes little difference for the interpretation of his results that I present here.

[108] Professor Rysman reports adjusted R-squared statistics, whereas I focus on ordinary R-squared statistics, since the latter are slightly easier to interpret. However, since the adjustments are a linear transformation of the ordinary R-squared that depends only on the number of observations and the number of regressors, one can safely conclude that the ordinary R-squared statistics are very similar across Professor Rysman's tables, because the adjusted R-squared statistics are identical. This is because the adjustment factors must be very similar across tables for a given set of data, unless there are large differences in the number of regressors (including each fixed effect in the regressor count), which is not the case in Professor Rysman's specifications.

the analysis in Figure 2 to be approximately correct for each of Professor Rysman's other models in his Tables 15–20 as well.

(109) To check this, I repeated the preceding analysis for each of Professor Rysman's other regressions. The results corresponding to column [5] of Figure 2 are reported in Figure 3. Figure 3 confirms that very little of the price variation within Census tracts or counties is explained by Professor Rysman's competition variables, especially for DS1 and DS3 services.

Figure 3. Percent of log(price) variation within Census tracts/counties explained by additional variables

	Professor Rysman Table #						
Regression	14	15	16	17	18	19	20
DS1 Census tract FE	1.5%	1.5%	1.5%	1.5%	1.5%	1.7%	1.5%
DS3 Census tract FE	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.4%
Highband Census tract FE	13.9%	13.9%	13.9%	13.9%	13.9%	N/A	N/A
DS1 county FE	3.5%	3.5%	3.5%	3.5%	3.7%	3.7%	3.5%
DS3 county FE	0.9%	1.0%	1.0%	1.0%	1.0%	1.1%	1.0%
Highband county FE	16.9%	17.0%	17.0%	17.0%	17.0%	N/A	N/A

Note: FE stands for fixed effects.

(110) In thinking about why Professor Rysman's analysis explains so little of the relevant price variation within Census tracts or counties, there are at least two possibilities to consider among many others. First, variation in the key competition variables (as measured by Professor Rysman) within Census tracts or counties is limited. I found that of all of the Census tracts used in Professor Rysman's DS1 regressions, 54 percent had no variation at all (among the blocks of the Census tracts used in the regressions) in the variable "a facilities-based competitor can serve a building in the Census block."[109] The corresponding percentages for Professor Rysman's DS3 and high-bandwidth regressions are 82 percent and 81 percent, respectively. Thus, a key competition parameter in Professor Rysman's analysis is identified from only a fraction of the available data. It is possible that counting facilities-based competitors within Census blocks is not a reliable way to measure the number of competitors that can compete for a customer's business—a possibility that I discuss at some length below. Thus, the poor fit could be attributed to measurement error.

(111) Another possibility is that there is substantial cost variation within Census blocks or counties that Professor Rysman's regression analysis does not account for. His analysis does not use any data on costs but attempts to control for cost differences through the fixed effects.[110] Professor Rysman notes

[109] The variable "a facilities-based competitor can serve a building in the Census block" is the key competition variable in Rysman's Table 14.

[110] Revised Rysman White Paper, 25. ("[I]n my approach to price regressions, it is impossible to completely control for

that competitive providers rarely build out to a distance corresponding to the size of a typical Census tract or county,[111] indicating that there likely is substantial variation in costs within a Census tract or county (because buildout decisions are highly dependent on costs); and this could explain the poor fit of his regressions. And if some of that cost variation is correlated with his competition variables, this could also bias his estimate of the effects of competition, as Professor Rysman himself explained.[112]

A.1.b. Professor Rysman's study provides little guidance as to how much competition goes how far toward eliminating market power

(112) Professor Rysman's study provides little guidance as to how much competitor presence goes how far toward eliminating market power, beyond estimating the average degree to which "some" competitor presence goes with lower prices than "none" does. As a result, his study does not provide adequate guidance for determining whether or where competitive providers should be subject to price regulation. Professor Rysman was instructed "to examine whether, and if so where, there is market power in [the BDS] industry."[113] He did "not test whether entry eliminates market power, or how much entry would be necessary to do so."[114] Thus, it is unsurprising that his results provide no clear answer to the question of how much of or what kinds of competitive presence go how far toward eliminating market power.

(113) There are many ways to define and evaluate market power. Professor Rysman took a "multipronged" approach that starts with descriptive statistics on market shares and competitive provider presence.[115] However, most of his study focuses on ILEC price regressions that look for evidence of negative correlations between ILEC prices and competitor presence. Professor Rysman did not look at other possible indicia of market power that are common in the economics literature (e.g., whether and how far price is above a competitive level, comparison of price to some measure of costs, or whether incumbents have power to exclude competitors).

(114) The "basic idea" that motivates Professor Rysman's regression analysis is that "if more competition reduces prices, it tells us that markets without competition exhibit market power."[116] However,

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unobserved cost and demand heterogeneity. . . Location fixed effects should substantially mitigate this problem.")

[111] Revised Rysman White Paper, 11.

[112] Revised Rysman White Paper, 25. ("So for instance, it is possible that low cost areas attract competitive entry, which leads to a spurious correlation between competition and price. Location fixed effects should substantially mitigate this problem, and indeed, the results within census blocks suggest that cost heterogeneity is not driving the results. Still, it cannot be ruled out.") IRW discuss a similar point in their comments on Rysman. *See* IRW June Decl., 3. ("An inference of market power cannot be drawn if, instead, the presence of competitors in an area is simply correlated with the underlying cost or demand conditions, with those conditions also being the source of observed ILEC price differences across areas.")

[113] Revised Rysman White Paper, 2.

[114] Revised Rysman White Paper, 19.

[115] Revised Rysman White Paper, 2.

[116] Revised Rysman White Paper, 19.

regulation of competitive providers (however defined) would appear to be justified only by finding market power even in markets that (by a corresponding definition) have competition present, and drawing an appropriate line around such markets requires more than finding that market power is present where there is no competition. But in his conclusion section, Professor Rysman offers no conclusions about the incremental effect of adding additional competitors once some competition is present, and the evidence on this question in his regression results is limited and difficult to interpret, as I discussed in Section IV.A.1.

(115) In particular, it is difficult to determine from Professor Rysman's regressions how much average prices are elevated above some (any) benchmark when a competitor and an ILEC are both present in the customer's location, as will occur whenever a competitive provider signs up a new customer, assuming ILEC presence is ubiquitous. This is the case for more or less any benchmark of interest, including, for example, a benchmark consisting of average prices in those markets with as much competitive presence as is observed at all often in Professor Rysman's data. This is because in most of his regressions he uses only an indicator variable for *some* competition present and does not distinguish between different numbers of competitors present; in his Table 19, the only table that does make this distinction, he only makes it for competitors that are present in the same Census block but not in the same building as the ILEC customer. The incremental effect of multiple competitors in the same building as an ILEC customer likely is poorly identified, since this is a relatively rare occurrence in the data, and a competitive trigger requiring three firms in the same location would mean price regulation almost everywhere.

(116) Furthermore, the effect of a competitor not in the same building almost certainly depends on whether there is competition already present in the building, and vice versa—but learning about this possibility is ruled out by the form of the regressions in Table 19—the only one of Professor Rysman's tables that provides any information about the incremental effects of additional competitors. So it is unclear whether Professor Rysman's findings of an additional effect from multiple competitors present in the Census block should apply when there is already at least one competitor in the building. For the same reason, one cannot learn from these regressions the effect of an additional competitor in the building when others may be present already in the Census block. These same issues are present in Professor Baker's regressions, as noted by others in this proceeding.[117]

[117] IRW March Decl., ¶¶ 21–23.

A.2. Problems with how Professor Rysman measures competitor presence

(117) My review of Professor Rysman's work identifies a number of potential problems with his various measures of competitor presence, especially to the extent that some kind of measure is needed to implement the Competitive Market Test proposed by the Commission. As discussed further below, I conclude that further work is needed and that other measures of competition should be examined before engaging in a broad extension of price regulation. The criterion for evaluating a particular way of measuring competition should be whether it reliably makes the right distinctions about the presence of durable market power rather than whether it can identify a significant difference in average prices. The latter does not necessarily imply the former.

A.2.a. Professor Rysman's regressions do not measure competition along the lines proposed by the Commission

(118) Professor Rysman, while noting that appropriate measurement of competition is "crucial" for his analysis,[118] does not use in his regressions a measure of competition that the Commission proposes to rely on for its Competitive Market Test. The FNPRM identifies the "Number of Competitors in the Relevant Geographic Area" as the measure to be used in the proposed test.[119] Professor Rysman takes a Census block as the preferred relevant geographic area, even while noting that there is some evidence that broader areas might be more appropriate.[120] The Commission's position is less than clear. The Commission takes a view "that the likely BDS geographic market, even for lower bandwidth services, likely extends beyond the area of the average Census block in which there is BDS demand."[121]

(119) Professor Rysman tabulates the number of competitors per Census block (see Rysman Table 9), but he does not use this measure directly in his regression analysis. Instead, as discussed above, he looks at competitor presence (only yes/no) in the building, at competitor presence (but not the number of competitors) in the same Census block, or at the number of competitors in the same Census block but not in the building. Thus, it is impossible to determine from his regressions, for example, the

[118] Revised Rysman White Paper, 10.

[119] FNPRM, § V.D.2.c.ii.

[120] Revised Rysman White Paper, 20–22. ("My approach is problematic to the extent that unobserved effects differ across census blocks within the same census tract. For instance, it might be the unobserved costs of providing service varies substantially even within census tracts. Also, it is possible that the ability of cable operators to provide alternatives to BDS (such as service over via best effort cable) varies across census blocks within the same census tract. These issues are difficult to address directly, but I discuss them in turn after presenting the results. . . Whether census-tract fixed effects or county fixed effects are more appropriate is difficult to say. Naturally, census-tract fixed effects better insulate regression results against unobserved heterogeneity.")

[121] FNPRM, ¶ 204.

predicted difference in average price between Census blocks with two versus three competitors after adjusting for other observed differences.

A.2.b. Evidence is weak that Census blocks are an appropriate geography for measuring competition

(120) Professor Rysman concludes that Census blocks are more appropriate than Census tracts or individual buildings as the geographic scope for measuring competition.[122] He concludes that there is no geographic demand substitution at all and that geographic supply substitution is limited.[123] The Commission largely agrees with these representations.[124] However, his conclusions about supply substitution are based on comparisons of evidence about the extent of geographic build-out distances to the average size of a Census block or tract, rather than on any direct evidence of provider willingness to supply distant customers for an appropriate price.[125]

(121) Any measurement that uses a segmentation of geography in discrete units faces a problem with edge effects when a customer is close to a geographic boundary. In particular, a provider that is nearby but on the other side of a boundary line will not be counted. This problem likely is not severe when competition is evaluated for large geographic areas such as an MSA, because (relatively) few customers will be close to the boundaries of these areas.[126] But for small geographic units such as individual buildings or Census blocks, customers will frequently be close to an edge. Professor

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[122] Revised Rysman White Paper, 11. ("Based on the narrative evidence, census blocks appear to be better measures for competitive pressure than census tracts."); *Id*. 16. ("There are some problems inherent in analyzing the data at the building level. It is possible that providers in nearby buildings exert competitive pressure even if they cannot immediately serve the building in question. A further problem is that many buildings may contain only one customer, and thus we will observe only one provider regardless of how competitive the market to serve that customer is. For these reasons, we also consider the census block. A census block can be thought of as a city block, and in many cases, there are multiple potential customers in a block. As discussed earlier, based on narrative evidence about CP buildout strategies, building across a census block is often feasible.") (*Internal citations omitted*)

[123] Revised Rysman White Paper, 9. ("Using locations to measure market structure should be linked to our concept of a relevant market. In theory, the relevant market should be determined in both geographic and product space, both by customer willingness to switch away in both dimensions, and by the willingness of firms to switch towards a customer in both dimensions. In practice, I expect customers are unlikely to switch geographic locations based on the price of business data services. A provider that raises price is unlikely to drive a customer to a new address that is served by a rival provider. Similarly, it would be rare that the expected price of BDS or managed services would significantly influence a customer's location decisions because such costs are a relatively small part of the purchasing firm's overall costs, and because in many instances other factors will dominate, such as the need to meet the purchasing firm's own customers' desires.")

[124] FNPRM, ¶ 161. ("In analyzing geographic markets we look to the effects of supply-side substitution (as it is commonly difficult for end users to switch locations in order to obtain better terms).")

[125] Revised Rysman White Paper, 11. ("Why focus on the building and the census block? Narrative evidence suggests that CPs generally build out no more than a quarter to a half-mile. Answers varied, but these sorts of distances appeared consistently in the narrative responses. . . In this data set, the median census tract has a land area of 1.71 square miles. . . In contrast, the median census block is 0.026 square miles, so a square median-sized census block would have sides that were 0.16 miles long.")

[126] Using larger geographic areas introduces a different problem: variation in competitive conditions within the area.

Rysman himself notes that a Census block is roughly equivalent to a city block.[127] Thus, counting competitors within a Census block may often fail to count other competitors that are very close to a customer, but in a different Census block.

(122) Professor Rysman notes that "[t]here are some problems inherent in analyzing the data at a building level."[128] He notes, for example, that if there is only one customer in a building and we measure competitors at the building level, then "we will observe only one provider regardless of how competitive the market to serve that customer is."[129] However, he fails to acknowledge that these same problems are extensively present at the Census block level. My examination of the location data used by Professor Rysman suggests that often there may be only a single customer per Census block for most of the Census blocks. I found, for example, that 66 percent of Census blocks have only a single customer location.[130]

(123) In one specification, Professor Rysman also looks at the effects of a competitor who can serve a building in the Census tract but cannot serve buildings in the Census block.[131] He finds some effect on price, which implausibly sometimes is larger than the effect he finds for presence of a competitor in the same building as the ILEC customer. It is difficult to reconcile such a pattern of results with economic theory; the most likely explanations are mismeasurement of competition or prices or a misspecified econometric model.

(124) It is significant that in previous work cited by Professor Rysman as motivation for his approach, different experts took varying approaches to measurement of the geographic scope of competition and that these differences led to significant differences in estimates of the effects of competition.[132] Professor Rysman indicates that alternative geographic measures of competition might be important to examine for evaluating BDS market power, including, for example, all competitors within a radius or drive time threshold of the customer.[133] These measures could have been implemented in principle,

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[127] Revised Rysman White Paper, 16.

[128] Revised Rysman White Paper, 16.

[129] Revised Rysman White Paper, 16.

[130] Data from FCC Special Access Database. Precisely, out of all 658,484 Census blocks, 433,059 have a single location within the block. Relatedly, the FCC Staff Report (Attachment 1, at 2) states that in certain regressions approximately 60 percent of the Census blocks are "singletons," meaning that only a single circuit record of a particular product (DS1, DS3, or high bandwidth) was identified within the Census block in the regression analysis. "A singleton is a census block which only has one circuit in it." Note that in some cases there could be other customer locations in a "singleton" block; if, for example, the ILEC customers at those locations had a different type of circuit (i.e., DS1, DS3 or high bandwidth) or if no ILEC price data were reported at those locations. Also note that in some cases a Census block that is not a singleton (i.e., has more than one circuit in it) may only have one customer location.

[131] Revised Rysman White Paper, Table 18.

[132] *See, e.g.*, Orley Ashenfelter, et al., "Empirical Methods in Merger Analysis: Econometric Analysis of Pricing in *FTC v. Staples,*" *International Journal of the Economics of Business* 13 (2006): 265–79 at 275–76.

[133] Revised Rysman White Paper, 23. ("An alternative to using geographic boundaries such as census blocks and census tracts to define markets would be to define a radius around each customer, and count the number of competitors that fall within that radii *[sic]*.")

admittedly with some computational complexity, using the available location data. However, these measures would themselves be at best an imperfect proxy for variables that drive supply substitution, including most importantly the cost of build-out from existing facilities, which would depend on local conditions.

A.2.c. Professor Rysman does not count certain competitors at all

(125) I have noted already that Professor Rysman generally does not count competitors outside the Census block. But this is not the only potential source of additional competition not counted in his regressions. As one example, Professor Rysman omits completely from his regression analysis the possible disciplining effect of competitors that offer a local connection through a UNE or other leasing arrangements (but treats IRUs very differently), even while recommending further analysis of this question.[134] Certainly we cannot presume that a UNE-based competitor has the same impact as one providing service over its own facilities, nor can we presume it has zero impact, and the effect of such competitors on price could be significant in situations where the competitor competes closely with the ILEC in other dimensions. This is likely to be the case if the customer is looking for a bundle of services and/or locations and the competitor can match most of the customer's needs via its own facilities. Relatedly, to the extent that wholesale prices for local connections are significantly below retail prices (as might be the case in situations where a competitive provider purchases a large volume of connections from an ILEC), UNE-based competitive providers may offer some degree of competition, especially if that provider is better able than an end-user customer to set two facilities-based providers to compete vigorously against one another.

A.2.d. Implications of mismeasured competitor presence

(126) To the extent that the Commission implements a Competitive Market Test based on the number of competitors in a region, it is important that the method for counting competitors is robust and that it properly distinguishes between areas where competition is working adequately, if not perfectly, or is likely to emerge, and areas where price regulation may be more appropriate. It is thus appropriate that Professor Rysman sometimes draws distinctions among competitors by their location.

(127) However, the discussion above, including in Section A.1.a, suggests that simply counting facilities-based competitors in a Census block does not reliably predict competitive performance, at least according to the measure (ILEC prices) that Professor Rysman's study uses. This indicates that before using this or any related study for an ambitious plan of widespread price regulation, further work is needed, notably including examining other measures of competition. In considering alternative

[134] *See* Revised Rysman White Paper, 5. Professor Rysman does not directly account for possible UNE competition in his regressions, but he points out that "[a]n interesting question is whether UNE entry also provides some competitive pressure. I do address this indirectly, but recommend the FCC consider analysis of UNE competition."

measures and approaches, the Commission should not presume that *any* method of counting competitors will reliably diagnose areas with substantial, durable market power.[135] Other criteria may be needed, possibly using data not yet available to commenters. As discussed in Appendix Section A.1.a, demonstrating differences in average prices may not be enough to reliably determine that price regulation is a good idea in the areas with fewer competitors. The criterion for evaluating a particular way of measuring competition should be whether it reliably makes the right distinctions about the presence of durable market power rather than whether it can identify a significant difference in average prices. The latter does not necessarily imply the former.

A.3. Professor Rysman's causality conclusions rest on unsupported assumptions

(128) To reliably determine the causal effect of competition on price using regression methods applied to non-experimental data, one must control for other influences on price that may be correlated with the selected measure of competition. As discussed further in this section, adequately controlling for noncompetition determinants of price (e.g., cost) without actually observing them is a very demanding exercise that inherently rests on untestable assumptions about correlations between things observed and unobserved.[136]

(129) Given this situation, the Commission should take a cautious approach to interpreting even the best empirical research based on the available data.

(130) In a randomized laboratory experiment, the randomization of the "treatment" is done specifically to ensure that it is not correlated with unobserved influences on the outcome of interest. This vastly simplifies the causal interpretation of experimental evidence: one does not necessarily need to control for other influences when estimating the effect of the treatment from experimental data, although doing so may result in greater statistical reliability.

(131) In situations where "nature" has done the randomization for us, that is a "natural experiment," then this happy situation may still exist. In particular, if the treatment (competition in this case) had been randomized then it would be uncorrelated with all other causal variables (whether observed or not): no matter what other characteristics we examined, regions with many competitors would look

[135] I note, for example, that while the Commission proposes to account for business density in the Competitive Market Test, no specific method for using business density to help identify areas with market power was proposed by the FNPRM or by Professor Rysman. Furthermore, since market power depends on many things, it is possible that even more extensive data collection and fairly complicated rules would be needed to reliably identify areas with substantial market power while avoiding a high probability of false positive findings.

[136] The referees suggest possible alternative approaches to the approach taken by Professor Rysman, for example, use of instrumental variables, but these too ultimately depend on untestable assumptions about correlations between the instrumental variables and unobserved determinants of price.

otherwise identical to regions with few competitors under randomization. But neither Professor Rysman nor others interpreting the Commission's 2013 BDS data collection demonstrates that those data meet the conditions for a natural experiment revealing the causal effect of competition on price.

(132) On the contrary, there are good reasons to believe that nature has *not* randomized competition variables in this case. For example, entry decisions by competitive providers almost certainly depend on their costs and the costs of the ILEC incumbent, and those costs in turn are important drivers of price, at least to the extent that the ILEC has some pricing flexibility. Thus, one would generally expect some correlation between cost and the number of competitors, and a failure to control for costs will bias the estimate of the causal effect of competition on price even in an otherwise well-specified econometric model.

(133) If nature has not done the randomization for us, then it might still be possible to estimate a causal effect of competition on price using regression analysis of non-experimental data, provided certain conditions are met. In particular, one needs a well-specified linear equation that accurately models the causal mechanism relating price to its observable determinants. Furthermore, the effect of any omitted variables on price must be uncorrelated with the regressors, including the competition variable.[137] If these conditions are satisfied, then a regression may, subject to some statistical uncertainty, recover the causal effects.

(134) These conditions almost certainly do not hold if competition and price are jointly determined, as is likely, given the preceding discussion. Professor Rysman was certainly well aware of these issues:

> In this statistical analysis, it is important that the presence of competition determines the price, rather than that the price determines the competition, or that some omitted variable determines both price and entry. My approach relies on some randomness (at least, relative to the other variables I study) in how CPs choose where to enter, driven perhaps by strategic decisions or internal cost concerns.[138]

(135) But Professor Rysman's causal interpretation of his regressions also requires that competition be random "relative to" (i.e., uncorrelated with) *unobserved variables that he did not study* that also influence price. Costs are an important example of a variable that likely creates trouble for his interpretation, as he recognized:

> A major concern is that locations differ in important and unobservable ways. For instance, locations may differ in how costly they are to serve with BDS. Thus, low

[137] Other conditions must generally be met as well, but I do not provide a complete statement of the relevant econometric theory here.

[138] Revised Rysman White Paper, 19–20.

> cost areas might see low prices and high competition independent of any causal effect of competition on price.[139]

(136) Professor Rysman attempted to control for costs (and other unobserved influences on price) by using fixed effects for Census tracts or counties as a proxy.[140] However, in the absence of any cost data it is impossible to know whether this control is adequate. Furthermore, as discussed at the end of Appendix Section A.1.a, Census tracts and counties tend to be much larger than the typical build-out distance of BDS providers, suggesting that costs likely vary within Census tracts and counties. It is therefore quite likely that cost variation within Census tracts or counties (or possibly other unobserved variables) is an "omitted variable" that "determines both price and entry"[141]—precisely the situation that Professor Rysman assumed away even while recognizing the problem.

(137) If, in fact, costs vary within Census tracts or counties, one might expect less variation within smaller geographies such as Census blocks. Then the effect of cost variation within Census tracts on price is an omitted variable in Professor Rysman's regression models that would be largely common within Census blocks, but not across Census blocks within the same Census tract or county. This in turn would cause the regression disturbances to be correlated within Census blocks.

(138) There is evidence in the FCC Staff Report that such correlations are present and significant. Standard errors for Professor Rysman's regressions reported in Appendix 1 of that report are calculated using a formula for "clustered" standard errors based on Census block clusters. These standard errors, which account for possible correlations of the regression disturbances within Census blocks, are consistently about twice as large as the "robust" standard errors calculated by Professor Rysman using a method that does not allow for disturbance correlations within Census blocks. The large difference in these standard errors provides indirect evidence that there is indeed a large amount of disturbance correlation within Census blocks.

(139) These regression disturbances are necessarily uncorrelated with Professor Rysman's competition variables because the nature of regression analysis forces that result: the regression disturbances will be uncorrelated with the regressors even if the regression is a biased estimator of the causal linear equation. So there is no definitive proof in the clustered standard error analysis that biases are present. However, the evidence of significant correlations in the regression disturbances within Census blocks should give Professor Rysman and the Commission pause. It suggests that something systematic has been omitted from the regressions, and without further investigation, possibly requiring additional data, one cannot be confident that the regressions accurately report a causal effect.

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[139] Revised Rysman White Paper, 20.

[140] Revised Rysman White Paper, 20.

[141] Revised Rysman White Paper, 19–20.

(140) I note, finally, two other issues related to the causal interpretation of Professor Rysman's results.

(141) First, although Professor Rysman holds out the example of the analysis done in the context of the Staples/Office Depot merger investigation and trial as a motivation for his work, there is a very important difference. Unlike Professor Rysman's situation in this BDS proceeding, experts there had access to panel data that showed variation in competition and prices over time as well as across customer locations and used the time dimension to control for some of the possible omitted effects.[142] Using a "difference-in-difference" (DID) methodology, experts in the *Staples* case were able to narrow the scope of possible biases by including fixed effects for both time and individual store locations, thus controlling for unobserved influences on price to the extent that these were constant over time at a particular store or were constant over different stores at each point in time.[143] Professor Rysman cannot use time fixed effects because his data on competitive presence have no time variation. Furthermore, he cannot use fixed effects at the finer geographic scale of a customer location because there is no variation in competition at that scale in his data.

(142) The DID methodology is widely regarded as one of the most reliable for studying the causal effect of events that affect competition, such as entry or exit of a competitor or mergers.[144]

(143) Finally, even if Professor Rysman has identified a causal effect of competition on average ILEC prices, it is possible that this does not imply any causal effect on prices paid by individual customers. To the extent that competitive providers are cherry picking the customers with a high willingness to pay, which seems a good strategy, average ILEC prices will tend to be lower in areas where competitors have entered simply due to that selection effect. That would be a mechanism in which the presence of more competitors causes lower ILEC prices even if the ILEC did not change its pricing conduct at all. In that simplified case, while entry might cause average ILEC prices to fall, it would do so by changing the group of customers for which the average is calculated (i.e., ILEC customers), not by lowering price for anyone, and the difference in average prices might have nothing to do with market power. This same point was made by Professor Sweeting.[145]

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[142] *See*, *e.g.*, Jonathan B. Baker, "Econometric analysis in *FTC v. Staples*," *Journal of Public Policy & Marketing* 18 (1999): 11–21 at 14–17.

[143] Jonathan B. Baker, "Econometric Analysis in *FTC v. Staples*," *Journal of Public Policy & Marketing* 18 (1999): 11–21 at 15. ("It is a common criticism of cross-sectional studies to question whether the results are biased because the econometrician is unable to observe and control for important differences across markets, and those differences are correlated with the variables whose effect is at issue.") Citing Cheng Hsiao, *Analysis of Panel Data* (New York: Cambridge University Press, 1986): 206–208.

See also John Kwoka, *Mergers, Merger Control, and Remedies. A Retrospective Analysis of U.S. Policy* (Cambridge, MA: The MIT Press, 2015), § 4, for a discussion of the advantages of panel data in merger retrospective studies; especially n. 2 at 242. ("While there are a number of prominent merger retrospectives that rely on time-series data, very few rely on purely cross-sectional data.")

[144] *See, e.g.*, John Kwoka, *Mergers, Merger Control, and Remedies. A Retrospective Analysis of U.S. Policy* (Cambridge, MA: The MIT Press, 2015), § 4.8.

[145] Andrew Sweeting, Review of Dr. Rysman's "Empirics of Business Data Services," White Paper, April 26, 2016, ¶ 19,

A.4. Further comments on Dr. Frentrup's study

(144) Dr. Frentrup's declaration describes bidding data from Sprint's Network Vision project, in which Sprint solicited bids for Ethernet backhaul to its cell sites.[146] The regressions discussed in Dr. Frentrup's declaration mainly compare the differences in prices among bids with different numbers of bidders. The regression analysis claims to show that "additional bidders result in lower prices."[147] Bidding data provide useful information to assess the price effect, as Professor Sweeting points out,[148] but the analysis of bidding data does not offer credible predictions to the BDS market for two main reasons.

(145) First, the price effect identified in the bidding data is unlikely to provide a good prediction that applies to the whole BDS market in 2016. The bidding data are from Sprint's Network Vision project, which started in late 2010, and includes bids with very specific requirements, such as a minimum capacity of 50 Mbps, only monthly recurring charges, and a term of seven years. Such stale data hardly represent all the BDS in 2016: the market conditions for BDS have changed significantly since 2010, a variety of BDS customers are seeking different types of services with various capacity requirements, contracts for BDS differ in their terms and conditions, and only a limited set of providers would be qualified to bid for projects with these specific requirements.[149] Therefore, the differences in the circumstances make it hard to conclude that the price effect found in the bidding data could be generalized to the whole 2016 BDS market.[150]

(146) Second, the price effect is possibly biased because Dr. Frentrup does not offer a credible basis for concluding that "the results of these bids can provide a natural experiment on the effect of competition on prices for individual locations."[151] A good natural experiment in this scenario would approximate randomized assignment of the number and identity of bidders to each bidding situation.[152] However, it is unlikely that the number or presence of bidders in the Sprint data approximates this condition. More likely, bidder participation is correlated with characteristics of the

available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A4.pdf

146 Frentrup Decl., ¶ 4.

147 Frentrup Decl., ¶ 3.

148 Andrew Sweeting, Review of Dr. Rysman's "Empirics of Business Data Services" White Paper, April 26, 2016, ¶ 9.e, *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-340040A4.pdf

149 *See*, *e.g.*, Farrell Decl., § V.B.

150 *See* discussion of the extrapolation issue in Aviv Nevo and Michael D. Whinston, "Taking the Dogma Out of Econometrics: Structural Modeling and Credible Inference," *Journal of Economic Perspectives* 24 (2010): 69–82.

151 Frentrup Decl., ¶ 7.

152 John DiNardo, "Natural Experiment and Quasi-Natural Experiments," in *The New Palgrave Dictionary of Economics Online*, eds. Steven N. Durlauf and Lawrence E. Blume (Palgrave Macmillan, 2008), *available at* http://www.dictionaryofeconomics.com/article?id=pde2008_N000142. ("Natural experiments or quasi-natural experiments in economics are serendipitous situations in which persons are assigned randomly to a treatment (or multiple treatments) and a control group...; they are also serendipitous situations where assignment to treatment 'approximates' randomized design or a well-controlled experiment.")

bidders and/or bidding situation that are not fully controlled for in the regression. If these factors also help drive the winning price for reasons other than simply the presence of more or fewer bidders, then the estimated relationship between bidder count and final price will be a biased estimate of the true causal relationship after accounting for the factors missing from the regression.[153] For example, if there were fewer bidders for cell sites with higher cost of providing Ethernet backhaul because of high cost, we may observe a negative relationship between prices and number of bidders that is due to the effect of cost on both prices and number of bidders.[154]

A.5. Further comments on Professor Baker's study

(147) In his January 27 and June 28 declarations, Professor Baker's analyses suffer from many of the same problems that apply to Professor Rysman's analysis, which I discussed above, especially in Appendix Sections A.2 and A.3.[155]

(148) Moreover, Professor Baker's arguments on the likely direction of biases in estimating a causal effect on prices from competition only cover some of the possible sources of bias.[156] As my discussion above indicates, I agree that there may be unobserved factors that potentially bias the estimation. But those potential biases may either weaken or strengthen an inverse relationship between prices and competition. For example, Professor Baker constructs a scenario where unobserved customer heterogeneity causes certain regressions to understate the negative relationship between prices and the number of competitors.[157] However, unobserved customer heterogeneity may also overstate the negative relationship between prices and the number of competitors. For an example, see paragraph (143) above.

(149) Similarly, Professor Baker notes that heterogeneity in "unobservable impediments to CLEC expansion" will "limit the number of locations where a greater CLEC presence will be associated with lower prices."[158] This hypothesized heterogeneity in the effectiveness of competitors to lower price could lead one to conclude that there is little effect of additional competitors even though the

[153] Dr. Frentrup stated, "Sprint performed regressions on the prices that results from these bids on such variables as the length of term, the capacity of circuit, and the number of bidders." *See* Frentrup Decl., ¶ 7. It is unclear what other variables were controlled for in these regressions.

[154] IRW discuss a similar point in their comments on Rysman: "An inference of market power cannot be drawn if, instead, the presence of competitors in an area is simply correlated with the underlying cost or demand conditions, with those conditions also being the source of observed ILEC price differences across areas." IRW June Decl., 3.

[155] In his June 28 declaration, Professor Baker made modifications to Professor Rysman's analysis for high bandwidth, but his modifications do not address concerns I have raised, including identification of causal effects and interpretation of incremental effects of additional competitors. Baker June Decl.

[156] *See* Baker June Decl., ¶¶ 23–26 and Baker January Decl., ¶¶ 68–94 for the discussion on direction of biases in the estimated coefficients.

[157] Baker January Decl., ¶¶ 69–75.

[158] Baker January Decl., ¶¶ 76–85.

effect is substantial in some cases that are under-represented in the data. However, one could look at the same hypothetical fact pattern and conclude the estimates of effects of competitor presence are over-estimated relative to the majority of markets where additional competitors do not lead to reduced prices.[159]

[159] Furthermore, his hypothetical assumes that additional competitors would have more of an effect in more competitive markets, where all firms have a disciplining effect. But if instead we assume that additional competitors have an effect only in markets with substantial barriers to entry (because the prospect of entry disciplines prices before actual entry occurs in the more competitive markets), then Professor Baker's interpretation of the data would get things exactly backward.

Appendix B. Proposals to tighten BDS price caps disregard downsides of resetting price caps

(150) In their June 2016 declaration, Professor Sappington and Mr. Zarakas offer that price cap regulation has merits compared to rate of return regulation, in particular, because under the price cap regime, regulated firms have incentives to reduce costs and retain cost savings.[160] However, they also propose price cap resetting for BDS and do not address the fact, recognized in the economic literature, that price cap resetting based on interim performance creates a ratchet effect that undermines the very incentive benefits that they call out.

(151) To be clear, I am not saying that price-cap resetting should never occur: that would be unrealistic and is unlikely to be optimal. But the adverse incentive effects of resetting should be acknowledged and weighed against the benefits. In contrast, under actual competition, firms retain their own cost savings for as long as they are able to avoid copying by their competitors.[161]

(152) Professor Sappington and Mr. Zarakas set out "(i) to explain how the prevailing price cap index for BDS delivered via TDM should be reset at the outset of the new price cap regime; and (ii) to identify the X-factor that should be employed in the initial phase of the new regime."[162] They "conclude that the prevailing price cap index should be reduced by at least 25.2 percent at the outset of the new price cap regime" and that "[t]his adjustment reflects a conservative estimate of the extent to which the relevant LECs (the 'price cap LECS') have experienced productivity gains in excess of input price increases in the supply of BDS since 2005." They also conclude that "an X-factor of at least 4.4 percent should be employed in the initial phase of the new price cap regime."[163]

(153) Professor Sappington and Mr. Zarakas write that

> If the prices the price cap LECs charged for BDS exceeded costs in 2005, then a more pronounced reduction in the price cap index would be required to ensure that the index permits only a normal profit at the start of the upcoming price cap regime.[164]

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[160] Sappington and Zarakas Decl., ¶ 7.

[161] Moreover, at or near a firm's profit-maximizing price, (voluntary) pass-through of cost savings to customers may be very substantial and, perhaps surprisingly, not undermine the firm's incremental profit from the cost savings (the boost in demand from the pass-through must be added to any increase in margins, and by the envelope theorem, the firm continues to get full benefit of the cost savings). In contrast, for binding price caps to reward cost savings, there must be little or no (mandated) pass-through, and vice versa.

[162] Sappington and Zarakas Decl., ¶ 4.

[163] Sappington and Zarakas Decl., ¶ 5.

[164] Sappington and Zarakas Decl., n. 11.

(154) They also explain that their suggested 25.2 percent reduction in the price cap index should be sharpened if ILECs could still earn normal profits:

> [T]he identified 25.2 percent reduction in the price cap index is predicated on the assumption that the price cap LECs were earning a normal profit in the supply of BDS in 2005. Evidence of above-normal profit at this time would indicate that the price cap index would need to be reduced by more than 25.2 percent to limit the price cap LECs to a normal profit at the start of the upcoming price cap regime.[165]

> [I]t may be appropriate to reduce the price cap index by as much as 44.7 percent at the start of the new price cap regime and to set an X-factor as high as 7.0 percent for the initial phase of the regime.[166]

(155) Professor Sappington and Mr. Zarakas also recommend against being "unduly" conservative in price resetting, with the reassurance that if the reset were to take prices below costs, firms could insist on a rate case.[167] An aggressive demand, with a fallback of a rate case, is likely to be very similar to rate of return regulation. And Professor Sappington and Mr. Zarakas offer no real assurance or mechanism for FCC assurance that price resetting would not happen again in a few years.

(156) Economic literature on price caps does not see them as a magic bullet that restores incentives that would be problematic in traditional cost-plus regulation. Part of the reason is that regulators do from time to time reset price caps to bring them back into proximity to costs (and that ill effect occurs whether or not the reset is warranted overall).[168] As explained by Berg (1995):

> Periodic reviews of price-cap plans tend to result in tighter regulation in response to revealed firm profitability (i.e., a "ratchet effect"). When this happens, incentives to reduce costs and price efficiently are diminished. . . The reinitialization of access prices looks like a "ratchet" effect -- tightening regulation when profit (or productivity) performance turns out to be higher than had been previously expected.[169]

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[165] Sappington and Zarakas Decl., ¶ 27.

[166] Sappington and Zarakas Decl., ¶ 42 (*internal citations omitted*).

[167] Sappington and Zarakas Decl., ¶ 43. ("The price cap LECs have the right to employ their proprietary data to demonstrate that a proposed price cap plan would not provide a reasonable opportunity to earn a normal profit on the supply of BDS. Consequently, the Commission has no reason to implement a revision of the price cap index or an X-factor that is unduly conservative.")

[168] David P. Baron, "Information, Incentives, and Commitment in Regulatory Mechanisms: Regulatory Innovation in Telecommunications," in *Price Caps and Incentive Regulation in Telecommunications*, ed. Michael A. Einhorn, 47–75 at 62 (Norwell, MA: Kluwer Academic Publishers, 1991).

[169] Sanford B. Berg, "What Can We Learn from the U.S. Experience in Regulatory Monopolies?" (working paper, University of Florida, Gainesville, FL, 1995), 13.

Appendix C. Further comments on Mr. Marcus's study

(157) In his July 28 submission, Mr. Marcus claims that, were the Commission to impose price reductions in the range of 5% and 25% for TDM and Ethernet-based services, then "real societal gains would follow in terms of welfare transfers, reduction in deadweight loss, and spill-over effects into the broader society."[170] However, his conclusions are based on an analysis that has many shortcomings, including those I briefly mentioned in paragraph (42).

(158) Most fundamentally, Mr. Marcus's study focuses entirely on the price of a predefined homogeneous good. In that inappropriately narrow framework, bringing price closer to marginal cost has economic benefits. But if pointing this out were enough, almost every industry would be a good candidate for price regulation. Mr. Marcus gives no attention to the downside of using price regulation rather than promoting competition as a means of achieving "real societal gains."

(159) Put differently, while the FNPRM might be read as an appeal for guidance about how to make the "giant leap" to price regulation, Mr. Marcus implies that the Commission's course is obvious because he implicitly assumes that (1) regulation is easy and costless, (2) output can expand at minimal incremental cost, and (3) any lost profits of BDS providers are inconsequential.[171] Regarding the first of these, I have commented at length already about the difficulties of implementing appropriate price regulation and the costs of doing so, and will not repeat those arguments here. Instead I focus on the other two implicit assumptions, and comment briefly on related methodological errors.

(160) Mr. Marcus focuses his analysis at first on changes in gross revenues that allegedly would arise from a substantial price reduction imposed through regulation. In general, a price decline will lead to greater demand, and assuming there is a matching increase in supply at the new price, gross revenues can rise despite a fall in per unit prices. Mr. Marcus purports to show that gross BDS revenues would not fall, or would not fall very much, or might rise substantially, in the face of significant price declines imposed by regulators.

(161) Putting aside the question of why this claim might be of interest to the Commission—a question that Mr. Marcus never addresses—the claim is subject to the important caveat that the hypothesized growth in customer purchases requires a matching increase in BDS supply. Perhaps recognizing this,

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[170] *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, 4.

[171] My review of the 2003 study by Rappoport *et al.* that is cited by Mr. Marcus for much of his methodology and factual claims indicates that, in addition to relying on facts that are now substantially out of date, that study also is vulnerable to these same criticisms. *See* Paul N. Rappoport, Lester D. Taylor, Arthur S. Menko, and Thomas L. Brand, "Macroeconomic Benefits from a Reduction in Special Access Prices," attached to Notice of Ex Parte Presentation In the Matter of AT&T Corp. Petition for Rulemaking to Reform Regulation Of Incumbent Local Exchange Carrier Rates For Interstate Special Access Services, RM Docket No. 10593, filed June 12, 2003 by the Special Access Reform Coalition (SPARC).

Mr. Marcus assumed, without offering any justification for the assumption, that no matter what price reduction the Commission were to implement, the BDS regulated price would be above short-run marginal cost.[172] However, increases in output of the magnitudes implied by Mr. Marcus's analysis would necessarily require new investments, implying significant marginal costs, and especially in high-cost areas, could lead to a failure of supply.

(162) Economic principles allow us to say something about incremental costs. If incremental or marginal costs were small, as Mr. Marcus seems to assume, and if demand is as elastic as he claims, then even a monopolist would voluntarily cut price below its observed level. For example, if the price elasticity of demand is -2.0, then even a monopolist would voluntarily cut price unless its relevant incremental cost is at least half of the price. As Mr. Marcus notes in the case of British Telecom, the demand elasticity facing a non-monopolist is likely to be considerably greater than the market elasticity,[173] which implies considerably lower markups.

(163) Because Mr. Marcus's own assumptions about price elasticity of demand imply substantial incremental costs, a sharper point is put on his failure to explain why effects of his proposed price cuts on gross revenues are of any policy interest: a big price cut that has relatively little effect on gross revenues will incur additional costs and lower BDS industry profits. Of course, some changes (notably in many cases stronger competition) that lower industry profits are good; but that does not imply that the profit impact of a regulatory price cut does not have harmful effects on supply.

(164) Furthermore, Mr. Marcus's focus on *short-run* marginal cost is off point. The long-run profitability of BDS suppliers—a topic that Mr. Marcus ignores—depends on how prices compare to long-run average costs.

(165) Mr. Marcus's analysis of welfare effects from the proposed price declines is summarized in his Figure 10. Central to his claimed welfare improvements are "spill-over" effects calculated by applying a macroeconomic multiplier to the recipient side of the estimated transfer from BDS providers to BDS customers. But he appears to ignore the other side of that transfer. Just as spending by BDS customers may have spillover effects, so too do tax payments, investments, and payments of shareholder dividends by BDS suppliers, all of which come from the profits that are reduced by the transfer. But Mr. Marcus effectively assumes that the appropriate multiplier for industry profits is zero. He provides no basis for this assumption. If, instead, the multiplier for industry profits is the same as the one for customer profits, then the net welfare effect of this transfer is zero.[174]

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[172] *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, n. 24.

[173] *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, n. 19.

[174] J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, 10. Mr. Marcus notes that this conclusion is normal in economics, but dismisses

(166) These basic problems surely doom Mr. Marcus's analysis, but there are further substantial flaws. For example, as he notes, the price elasticity of demand is not in general a constant along a demand curve.[175] He simply assumes that it is. Having done so, however, he then calculates the revenue effect that would (if it mattered) ensue from a price change using a formula that implicitly assumes that demand is linear over a large range of prices, but offers no justification or evidence for this assumption.[176]

(167) Finally, Mr. Marcus's evidence for his estimates of demand elasticity is strikingly weak. Even if analysis of British Telecom data were informative for the US BDS industry, he correctly notes, but then ignores, that an analysis should include some attempt to control for exogenous changes in demand that might have increased output even with no price reductions.[177] Finally, he relies heavily on a 2003 study, despite the many substantial changes in the past thirteen years in BDS.[178]

(168) In sum, Mr. Marcus's study of welfare effects of BDS price reductions suffers from too many omissions and unsupported assumptions to be given any weight.

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it because he views existing prices as involving a compulsory transfer from customers to providers—forgetting that the same could arguably be said in a generic version of the textbook discussion that leads economists to their usual view on this matter.

[175] *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, n. 17.

[176] Mr. Marcus's calculations assume that the expression for "PED" on page 14 of his paper is valid for all possible price changes under consideration. Solving this expression for Q_1 as a function of P_1 it is clear that he is assuming linear demand and that the assumed value of "PED" gives the elasticity of demand only at the initial price and quantity. However, he does not seem to realize this since his footnote 17 suggests that he is assuming demand with constant elasticity, which is incompatible with his expression for PED, and he appears to be unaware of this clash. With linear demand, elasticity is not constant and declines as the price falls. Once the elasticity falls below 1.0 (in magnitude) revenues also start to fall. This explains why revenues decline immediately with price decreases for the PED = -1.0 line in Mr. Marcus's Figure 2, but rise at first and then decline for values of PED that are greater in magnitude. With constant elasticity demand, revenues do not depend on price at all when the elasticity is -1.0, and increase without bound as prices fall for larger elasticities. *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, 14, n. 17 and Figure 2.

[177] *See* J. Scott Marcus, "Welfare Effects of Reductions in the Price of Leased Line Equivalents in the U.S.," attached to INCOMPAS letter dated July 28, 2016, 2 and n. 2.

[178] Paul N. Rappoport, Lester D. Taylor, Arthur S. Menko, and Thomas L. Brand, "Macroeconomic Benefits from a Reduction in Special Access Prices," attached to Notice of Ex Parte Presentation In the Matter of AT&T Corp. Petition for Rulemaking to Reform Regulation Of Incumbent Local Exchange Carrier Rates For Interstate Special Access Services, RM Docket No. 10593, filed June 12, 2003 by the Special Access Reform Coalition (SPARC).

Exhibit B

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	
Business Data Services in an Internet Protocol Environment	WC Docket No. 16-143
Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans	WC Docket No. 15-247
Special Access for Price Cap Local Exchange Carriers	WC Docket No. 05-25
AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services	RM-10593

Reply Declaration of John W. Mayo

August 9, 2016

Table of Contents

I. Introduction

1. My name is John Mayo. I previously filed a declaration in this proceeding.[1] I have been asked by Comcast to assess the economic merits of the initial comments filed on June 28, 2016 by parties to this proceeding.

2. In my Initial Declaration, I noted that the merits of the Commission's proposals in its FNPRM depend on the strength or weakness of three foundational cornerstones: (1) an accurate characterization of the current BDS marketplace, (2) a reliable evaluation of competition, and (3) a forward-looking regulatory framework reflecting the marketplace in 2017 and beyond.

3. The opening comments in this proceeding filed on June 28, 2016 validate the importance of each of these cornerstones, even if they do not agree in entirety on the details. In this Reply Declaration, I point to a variety of instances in which other parties have independently identified these criteria as critical and have offered observations that reinforce the conclusions that I reached in my Initial Declaration. I also identify several instances in which commenters provide a contrary perspective. I address these with an eye toward clarifying, if not altogether reconciling, the disparate opinions.

4. The remainder of this Reply Declaration describes my findings in greater detail. It is worth noting some of these findings at the outset:

   a) The marketplace for BDS is changing rapidly and has changed significantly since 2013.

   b) The evidence cautions against extrapolating policy implications from the Commission's data and analysis (reported in the FNPRM and subsequent filings) and expanding the reach of regulation in the provision of BDS.

[1] Declaration of John Mayo, June 28, 2016 ("Initial Declaration").

c) Imposing price regulation on new entrants—the very firms that are providing the full measure of competitive stimulus observed in this market—would thwart competition and create, not eliminate, barriers to entry and expansion.

II. The Commenters' Evaluation of the BDS Market

A. Rapid Evolution of the BDS Marketplace Since 2013

5. In my Initial Declaration, I noted that a key cornerstone for the merits of the regulatory proposals embedded in the FNPRM is the accuracy with which the Commission captures the current state of the BDS marketplace.

6. In a stagnant market with only modest changes in market supply and demand over time, the Commission's perspective on and policies toward the market would not be distorted by examining data from several years ago. The evidence I examined in my Initial Declaration, however, indicates that the marketplace for BDS is changing rapidly and has greatly evolved since the Commission's collection of 2013 data.[2] For instance, I pointed out that over the past several years, there has been significant growth in demand for high-bandwidth BDS; entry and growth by a variety of competitive providers; and capacity expansions and investments, all of which have collectively changed the BDS marketplace considerably. I also provided evidence in my Initial Declaration that these changes have cumulatively led to a number of pro-consumer consequences, including BDS prices that have been rapidly falling due, in large part, to competition among incumbent and new BDS providers.[3]

7. The initial filings by a variety of commenters on June 28, 2016 have now provided important validation of the dynamic nature of this marketplace, as summarized below.

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[2] See Initial Declaration, Section III.A.

[3] See Initial Declaration, Section IV.

1. Growth in Demand for High-Bandwidth BDS

8. Commenters report that the BDS market has experienced significant growth over the past several years and that the market is projected to grow even more in upcoming years. According to the American Cable Association ("ACA"),[4] "Ethernet is a growing market as customers transition from legacy TDM services to support growing business bandwidth requirements."[5] ACA also reports that "[b]etween 2016 and 2020, the consulting firm Ovum predicts a compound growth rate of 16.1 percent in metro Ethernet connections. Connections at 1 Gbps are forecast to grow at the fastest rate, and lower bandwidth 10 Mbps connections are expected to decline after 2017. To achieve higher bandwidths, businesses and cell towers will need to be connected to a fiber network."[6]

9. CenturyLink, Consolidated Communications, Fairpoint Communications, and Frontier Communications (collectively, "CenturyLink et al.") note that according to the International Data Corporation, U.S. Ethernet service revenues are projected to grow from $8 billion in 2015 to $12.1 billion by 2019, notwithstanding their expectation that prices for these services will continue to decline over this period.[7]

2. Increased Entry and Growth by Cable Companies, CLECs, and Other Providers

10. Commenters affirm that this rapid growth in demand and the anticipation of future growth has attracted entry and growing competition in the provision of BDS. Over the past several years, cable companies, CLECs, and other BDS providers

[4] "The ACA represents approximately 750 smaller cable operators and other local providers of broadband Internet access, voice, and video programming services to residential and commercial customers." "Comments," American Cable Association, June 28, 2016 ("ACA Comments"), at 1.

[5] ACA Comments, at 31.

[6] ACA Comments, at 31.

[7] "Joint Comments of Centurylink, Inc., Consolidated Communications, Fairpoint Communications, Inc., and Frontier Communications Corp.," June 28, 2016 ("CenturyLink et al. Comments"), at 31.

have been rapidly entering new markets by increasing their product offerings and geographic reach.

11. For example, Fiber to the Home Council Americas ("FTTH") observes that "CLECs and cable companies are responsible for a significant portion of the growth in the supply of high performance services in recent years" and "[t]he growing investment by these non-ILEC providers has made the market for Ethernet services more competitive, as demonstrated by their climb up the Ethernet supplier rankings."[8]

12. Many commenters point to cable providers as an important fuel for growth. The United States Telecom Association ("USTelecom") observes that "there is another part of the story - what has transpired since 2013 - which is not reflected in the 2013 data collection. Due to aggressive growth through investment and targeting of business customers from CLECs and cable providers, BDS competition has exploded in the last three years."[9] FTTH also notes that the competitive positioning of the Ethernet BDS market has shifted—cable companies have increasingly become major players in the Ethernet market, and "Comcast in particular has invested heavily, including by launching a sales group in 2015 to target Fortune 1000 customers."[10]

3. Capacity Expansions and Investments by BDS Providers

13. Many parties offer evidence that BDS providers (both incumbents and new entrants) have ramped up their build-out of fiber networks over the past several years. FTTH commented that "the supply of high performance services is growing, due to participation in the market by both traditional (ILEC, CLEC and

[8] Comments of the Fiber to the Home Council Americas on the Further Notice of Proposed Rulemaking, June 28, 2016 ("FTTH Comments"), at 14.

[9] Comments of the United States Telecom Association, June 28, 2016 ("USTelecom Comments"), at iii.

[10] FTTH Comments, at 14.

cable) providers and non-traditional providers, as well as the development of new and innovative business models for providing such services."[11] Referencing third-party data, FTTH reported: "ILECs, CLECs, and cable providers have taken steps to add a total of more than 100,000 miles of metro fiber between 2013 and 2015;" "[m]etro fiber route miles increased at an average rate of eight percent for each type of provider during that time;" and "CLECs and cable providers increased the number of fiber lit buildings they serve at an average rate of 14 percent between 2013 and 2015."[12] FTTH also observed that "a number of non-traditional service providers, such as dark fiber specialists, tower operators, and real estate investment trusts are deploying fiber to provide high performance BDS."[13]

14. ITTA observed that "[c]ompetitive LECs have made significant strides in the Ethernet marketplace," having deployed fiber in at least {{ }} census blocks nationwide, covering approximately {{ }} percent of the U.S. population.[14] ITTA also reported that "[a]t least one competitive LEC has deployed fiber in {{ }} percent of the subset of top census blocks that comprise 80 percent of total high-capacity revenues that can be assigned to census blocks."[15]

15. ACA points to substantial recent expansions and substantial investment by cable companies that provide BDS.[16] For example, Time Warner Cable (now Charter

[11] FTTH Comments, at 12.

[12] FTTH Comments, at 13.

[13] FTTH Comments, at 17.

[14] Comments of ITTA – The Voice of Mid-Size Communications Companies, June 28, 2016 ("ITTA Comments"), at 18-19.

[15] ITTA Comments , at 19.

[16] ACA Comments, at 29-31.

Communications) has increased the number of fiber-lit buildings from 10,000 in 2012 to 70,000 today.[17]

16. Charter alone has invested over {{ }} annually in expanding its BDS capabilities and has expanded its provision of BDS to approximately {{ }}[18] It has expanded from 55,000 fiber route miles and 5,500 fiber-lit buildings in 2012 to over 65,000 fiber route miles and 12,000 fiber-lit buildings.[19] Furthermore, Charter stated that it has recently launched a promotion to offer BDS to {{ }} at a price significantly below the average price offered by its competitors.[20]

17. According to Cox, "Since the FCC's special access data collection in 2013, Cox Business has invested an additional {{ }} to serve business customers. Cox currently anticipates continued investment growth of around {{ }} year over year. The increased investment has resulted in an increase in the number of lit, on-net buildings served by Cox's fiber. As of March 2016, Cox had extended its fiber to {{ }} locations (buildings and cell sites), up from {{ }} fiber-based locations reported by Cox in the 2013 data collection. The number of business accounts has been growing on average at approximately {{ }} month over month."[21] Cox also commented that it "anticipates that it will continue to increase its investment going forward, assuming it does not become subject to rate regulation and other proposals set forth in the *Further Notice*."[22]

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[17] ACA Comments, at 30.

[18] Comments of Charter Communications, Inc., June 28, 2016 ("Charter Comments"), at 5.

[19] ACA Comments, at 30.

[20] Charter Comments, at 5.

[21] Declaration of Jeremy Bye and Larry Steelman, June 27, 2016 ("Bye and Steelman Declaration"), at 7.

[22] Comments of Cox Communications, Inc., June 28, 2016 ("Cox Comments"), at 7.

18. Cablevision (now Altice) has also expanded its fiber route miles by 50 percent and fiber-lit buildings by 80 percent, over the past five years.[23]

19. ACA indicates that its members are investing "at least tens of millions and upwards of $300 million of investments annually to deploy facilities to support the provision of BDS."[24] ACA also notes that the investment trends of smaller providers are similar to that of cable Multiple System Operators ("MSOs") and cited research by SNL Kagan finding that capital investments in commercial services by three of the largest MSOs were $1.07 billion in 2012, $1.16 billion in 2013, $1.19 billion in 2014, and $1.33 billion in 2015.[25]

20. The outlook for future investment is similarly strong. For instance, FTTH referenced a research report by Gartner, Inc. which projected that BDS spending on Ethernet and fiber-based services will increase more than 50 percent from $11 billion in 2015 to $17 billion in 2020.[26]

4. Falling Prices

21. Numerous commenters in this proceeding have provided proprietary and third-party data on BDS prices that validate my observation that "average prices in the provision of BDS have, in fact, been {{ }} in virtually every bandwidth category."[27]

22. For example, FTTH commented that "available market data and other information demonstrate that prices for high performance services (above 50 Mbps products) are declining despite continuously increasing demand."[28] FTTH referenced an

[23] ACA Comments, at 31.

[24] ACA Comments, at iii.

[25] ACA Comments, at 29-30.

[26] FTTH Comments, at 9.

[27] Initial Declaration, at ¶104.

[28] FTTH Comments, at 7.

Ovum research report reporting that "between 2013 and 2015, Ethernet prices on a global scale were cut in half"[29] and that "Ethernet ASPs / Mbps" have decreased from approximately $60 in 2013 to approximately $35 in 2015 and are projected to decline to less than $10 in 2020. FTTH also noted that "[t]he U.S. is experiencing a similar pricing pattern."[30]

23. Similarly, Cox observed that "[i]n every market Cox serves, [it] is witnessing declining prices due to competitive pressures"[31] and that "Cox's average monthly recurring charges per megabit for its fiber-based Ethernet services have declined by some {{ }},[32] from approximately {{ }}[33]

24. Charter also commented that "cable's entry into the BDS market has been accompanied by broad-based price declines in BDS."[34] Charter reported, for example, that the average monthly regional prices of Time Warner Cable's dedicated services have declined {{

[29] FTTH Comments, at 8.

[30] FTTH Comments, at 8.

[31] Cox Comments, at 24.

[32] Cox Comments, at 25.

[33] Cox Comments, at 25.

[34] Charter Comments, at 6.

}}[35] and commented that "[t]hese declining prices are not unique but instead are indicative of prices falling across the marketplace."[36]

25. According to ACA, "smaller providers' prices for BDS have decreased across their markets, whether urban or rural and for all customer segments, retail and wholesale."[37] Furthermore, "[o]n average, smaller providers have decreased pricing for Ethernet services by 50 percent over the past five years;" and "[t]hese decreases are largely due to competition effects and resulting decreases in margins and not because of decreased cost."[38] ACA also provided pricing data "for one ACA member with significant operations across urban, suburban and rural markets" and reported that the "Average Ethernet Pricing Index" declined from 100 in 2011 to 78 in 2013 to 46 in 2015.[39] As such, in the 2-year period from 2013 to 2015, the pricing index declined by more than 40 percent.[40]

26. Finally, CenturyLink et al. commented that Ethernet BDS prices "continue to decline significantly year-to-year,"[41] bringing "more competition for Ethernet and other business data services and driv[ing] prices closer to commodity levels. As a result, CenturyLink has repeatedly lowered its Ethernet prices to try to stay competitive resulting, over the past years, in price declines on average of **{{** }} percent."[42]

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[35] Charter Comments, at 6-7. See also, Declaration of Phil Meeks, June 28, 2016 ("Meeks Declaration"), at 3.

[36] Charter Comments, at 7. See also, Meeks Declaration, at 3.

[37] ACA Comments, at 36.

[38] ACA Comments, at 36.

[39] ACA Comments, at 36.

[40] Calculated as 1 - 46/78 = 41%.

[41] CenturyLink et al. Comments, at 24.

[42] CenturyLink et al. Comments, at 24.

B. Lessons from 2013-2016

27. The chorus of voices confirming the rapid pro-competitive evolution of the BDS marketplace warrants caution in the establishment of a regulatory regime for 2017 and beyond, especially given the FNPRM's reliance on data from 2013 (including data on monthly bills in multi-year contracts that were negotiated and finalized much earlier than 2013). Certainly, the evidence cautions against expanding the reach of regulation in the provision of BDS.

28. The most recent metrics of the BDS marketplace are important too because they provide evidence to allow the Commission to discriminate among competing claims. For instance, Sprint has claimed that insurmountable barriers to competitive entry typify the BDS marketplace.[43] Yet it is difficult, if not impossible, to reconcile this claim with the observed growth of the variety of competitive providers in the marketplace (described above and in my Initial Declaration). The observed rapid growth by competitive providers offers compelling evidence that barriers to expansion are being overcome.

29. Similarly, Birch, Earthlink, and Level 3 jointly commented that Level 3 can rarely supply BDS to customers that seek BDS of 100 Mbs or less.[44] From this observation, they seek to extrapolate a larger conclusion, namely, that "Level 3's experience demonstrates that competitive carriers generally cannot deploy fiber connections to customers that demand Business Data Services with capacity of 100 Mbps or less"[45] and that "[t]here is no meaningful Business Data Services competition at or below 100 Mbps."[46]

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[43] See, e.g., Comments of Sprint Corporation, June 28, 2016 ("Sprint Comments"), at 5-12.

[44] Comments of Birch, Earthlink, and Level 3, June 28, 2016 ("Joint CLEC Comments"), at 4-5. ("As John Merriman, Vice President of Finance for North America at Level 3, explains in a declaration filed with these comments, Level 3 cannot generally deploy connections to customers that demand Business Data Services of 100 Mbps and below.")

[45] Joint CLEC Comments, at 22.

[46] Joint CLEC Comments, at 21. (italics in original)

30. While such constraints may exist for a particular firm, the fact is that growth of BDS capacity at speeds below 100 Mbps has flourished in recent times. For example, research by Ovum cited by ACA shows that U.S. Metro Ethernet Connections for both 10 Mbps and 100 Mbps services increased significantly from 2013 to 2015 and are projected to continue increasing through at least 2017.[47] The data collected by the Commission also show rapid and substantial growth in this area. Total revenues for competitive providers from contracts for less than 100 Mbps bandwidth grew 250 percent from $164.8 million for contracts starting in 2010 to $577.6 million for contracts starting in 2013. The number of circuits increased by almost 400 percent during this time frame.[48] Importantly, this rapid expansion occurred in the face of significant price declines. The Commission should, therefore, be very careful to not confuse constraints on particular competitors (a normal part of every market) with constraints on the competitive process. When market-level data demonstrate the ability of firms to expand collectively, concerns like those expressed by Level 3 should receive little policy weight.

III. The Commenters' Evaluation of Competition

31. While there is some disagreement on the specific interpretation of the marketplace data, commenters are in significant agreement that, as I stated in my Initial Declaration, another critical cornerstone to a sound resolution of this proceeding is a clear and accurate assessment of competition.

32. The opening comments center on two key windows into the extent of competition in the provision of BDS.[49] I discuss each below.

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[47] ACA Comments, at Appendix B (Figure 2).

[48] See Special Access Data.

[49] In my Initial Declaration, I address a third area of analysis pertaining to competition offered by Professor Rysman and the Commission based on the revenue market shares of both ILECs and their rivals. Relatively few comments were received on this aspect of Professor Rysman's analysis. It is, however,

1. Location-Based Measure of Competition

33. Parties have debated over the implications for competition revealed by the observed location of physical facilities of competitors across the United States. The key question addressed by these parties is to what degree the facilities of competitors are physically and economically "near" those of the demanders of BDS. The implied, if not explicit, importance of this inquiry is that if it is judged that competitors (in 2013) were "near" demanders of BDS, then they can more easily expand to supply those customers in the event that an incumbent firm were to attempt a supra-competitive price increase. Dr. Mark Israel, Professor Daniel Rubinfeld, and Professor Glenn Woroch (hereafter "IRW") make a compelling case that supply is "close" to demanders, while other parties offer a lens under which they see BDS demanders with few nearby choices of providers based on existing locations.[50]

34. This is an honest debate, but if taken solely on its own terms, it misses an important feature of the provision of BDS. Specifically, BDS is a capital-intensive service and these capital expenditures are, once expended, sunk. Such sunk costs can create formidable barriers to entry *if* they must be expended in advance of a firm's ability to compete for customer patronage. This is, however, often not the case in the supply of BDS. In particular, it is my understanding that the norms of this business are such that firms generally compete for new business

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worth noting the caveat offered by Professor Sweeting in his review of Professor Rysman's analysis, specifically that "it is not clear that one can infer from measures of national market concentration that price competition is limited." "Review of Dr. Rysman's 'Empirics of Business Data Services' White Paper," Andrew Sweeting, April 26, 2016 ("Sweeting Review"), at 6.

[50] In particular, IRW point out that, even without considering cable companies' HFC networks, "about half of the buildings with BDS demand that are served only by an ILEC were within 88 feet (0.017 miles) of at least one other provider's fiber facilities, 75% were within 456 feet (0.086 miles), and 90% were within about 1,107 feet (0.21 miles), and virtually all (98.7%) were within a half mile." M. Israel, D. Rubinfeld, and G. Woroch, "Analysis of Regressions and Other Data Relied Upon in the Business Data Services FNPRM And a Proposed Competitive Market Test," June 28, 2016 ("IRW Second White Paper"), at 5. Others, e.g., Birch, Earthlink, and Level 3, seem to argue that a competitive provider is not close enough to the customer unless the competitor has already deployed a connection within the customer's building. Joint CLEC Comments, at 8.

prior to the expenditure of sunk costs. This typically happens either through a request-for-proposal (RFP) process or through salespeople who call on potential customers. In either case, competitors make offers to supply and then negotiate contract terms (e.g., prices and duration of the contract) with customers largely *prior to physical investment*.

35. This feature of the BDS marketplace is critically important because it indicates that any assessment of the physical location of competitors will systematically mask this unseen dimension of competition and competitive rivalry. It will also fail to capture the ability of firms to compete for business and to expand their physical footprints when business opportunities emerge. In short, judging competition in the BDS marketplace merely from an assessment of the physical location of competitors' facilities is akin to declaring that the size of an iceberg consists only of the portion that is visible above the water. Because the unseen critical drivers of competition, such as the ability and willingness to compete for new business, are key drivers of a market's propensity to support competitive pricing, it is critical that the Commission qualify any interpretation of the "location-data-debate" with a more developed and complete understanding of the nature of competition in this marketplace.

2. Price-Based Measure of Competition

36. In my Initial Declaration, I identified several reasons demonstrating why the design, interpretation, and execution of the econometric framework relied upon by the Commission in the FNPRM cannot provide reliable evidence on the critical question of whether any firm in the BDS marketplace has the ability to raise prices to supra-competitive levels (i.e., has significant market power). For emphasis, I summarize these briefly below.

- The negative correlation between price and the presence of competitors is not uniquely a feature of monopoly markets, but rather a feature of all markets. Thus, finding such a correlation fails to

separately identify areas of market power from situations in which the observed correlation is generated innocuously.

- Entry by providers in locations with lower costs can be expected to generate the negative correlation of more competitors and lower prices even if the market into which the firms are entering is otherwise producing competitive prices.[51]

- As firms begin to build out their physical networks in an area, their proximity to, and costs to serve, additional customers in that area are likely to fall. This reduction in cost to serve prospective customers in the area is likely to generate price reductions in the marketplace. This results in a negative correlation between prices and the presence of competitors, but again, this correlation has little to do with the presence or extent of market power of incumbent firms.

- Professor Rysman's regression model is designed to measure the relationship between price and the presence of competitors. But it takes the number of firms as exogenously given. A more complete analysis of whether any incumbent firm has significant market power (the *sine qua non* of rate regulation) must also account for the ability or inability of new firms to both enter and expand in response to any market price increase.[52] This elasticity of supply, which has been recognized by the Commission as central to the determination of

[51] Professor Sweeting's external review also makes this point when he states that a necessary assumption for the validity of the price-competitive presence model is that "the entry of competitors is not correlated with an ILEC having particularly high costs" (relative to new entrants). Sweeting Review, at 3.

[52] Indeed, as pointed out by Professor Valletti in his external review of Professor Rysman's analysis, to the extent that competitive entry is determined endogenously the parameter estimates from the regression results are biased. Valletti Review, at 6.

market power, is simply not present in the proposed regression framework.[53]

- The regression framework draws from antitrust methods used in merger analysis. In merger analysis, understanding the relationship between price and the number of competitors is of central importance. In that context, if a reduction in the number of competitors leads to price increases, then policymakers may appropriately halt the reduction in the number of firms by banning the merger in order to stave off a decrease in economic welfare. However, as I explained in my Initial Declaration,[54] while this negative correlation may legitimize antitrust authorities' intervention in a merger case, this same negative correlation cannot similarly justify imposing heavy-handed rate regulation and similar regulatory mandates in the case at hand. Indeed, such a knee-jerk reaction will almost certainly harm economic welfare by causing fewer firms to compete for customer patronage.

- The regression model estimates the effect of the presence of a competitor – in 2013 – on observed prices (in contracts that are active in 2013). The narrative of a negative correlation of these variables is that competitive presence causes prices to be lower. But, because a substantial share of the observations in the dataset are for multiyear contracts whose prices were established *before* 2013, one simply cannot infer that these prices were *caused* by competition observed in

[53] It is also insufficient for the Commission to seek to fall back on its discussion of barriers to entry outside the regression framework to salvage the claim that the analysis does consider the supply elasticity in this market. The problem is two-fold. First, the regression model purports to "detect market power" – by itself – which, absent internally accounting for the supply elasticity, it simply cannot do. Second, while the Commission identifies factors that may constitute barriers to entry and expansion, it conducts no empirical analysis to corroborate the power of these barriers. And, as indicated above (e.g., Section II.A.2, Section II.A.3 and ¶30), notwithstanding policy opportunities to further reduce barriers, the empirical evidence to date indicates that firms have achieved success in overcoming any existing barriers to entry and expansion.

[54] Initial Declaration, at ¶¶65-66.

2013. The model simply cannot be interpreted in the manner described in the FNPRM.

37. The defects described above apply more generally to other refinements of Professor Rysman's econometric framework. For example, Professor Baker, Dr. Verlinda, and Dr. Zarakas performed modified versions of Professor Rysman's regression analysis and claim that the results of these regressions provide evidence that ILECs exercise market power in the provision of "high-bandwidth" BDS (i.e., bandwidth in excess of 50 Mbps).[55] However, their refinements suffer from the same critical defects associated with the underlying econometric framework as I have described above.

38. Several other parties have identified the critical defects in Professor Rysman's regression approach. For example, highlighting a significant endogeneity issue with the approach adopted by Professor Rysman, IRW observe that "[t]he core problem with [Professor Rysman's regression] approach is that it does not isolate sources of variation in the data that would permit *causal* inferences about the effects of competition on BDS prices."[56] Consistent with the observation I made in my Initial Declaration, IRW noted: "Critical to this approach is the need to establish a *causal* relationship – that an additional competitor *causes* prices to fall – not just a *correlation* between number of competitors and price levels. The need to separate causality from correlation here is far more than a technical or academic concern. It goes to the heart of Prof. Rysman's approach."[57]

39. Others, too, have made similar observations. For example, Professor Sweeting, who served as an external reviewer of the analysis performed by Professor

[55] See Declaration of Jonathan Baker on Competition and Market Power in the Provision of Business Data Services, June 28, 2016 ("Baker Declaration"), at Section III.A, Table 1; Declaration of William Zarakas and Jeremy Verlinda, June 28, 2016 ("Zarakas and Verlinda Declaration"), at 6-9, Table 3.

[56] IRW Second White Paper, at 9.

[57] IRW Second White Paper, at 9.

Ryman, has observed that "cross-sectional price-concentration analysis inherently suffers from the possible problem that there is some unobserved factor that affects prices and is correlated with competition that may lead to a spurious relationship."[58] And while acknowledging Professor Rysman's efforts to correct for this problem, Professor Sweeting observes that the approach may still lead to situations in which the regressions "will overestimate or underestimate the effects of competition on prices."[59]

40. Similarly, even those that are generally supportive of the regression approach adopted by Professor Rysman point to the debilitating effects of the "noisiness" of the data. For example, Professor Kwoka observes that "[i]t is not clear… whether [Professor Rysman's] methods for resolving such issues as contract duration, multilocation customers, bundling, and nonlinear pricing are sufficient, or whether perhaps they even introduce other problems in the final data base. What is clear is that even after his efforts to control for these factors, Dr. Rysman's data remain quite noisy, and his results remain 'inconclusive.'"[60] Professor Kwoka notes that the mixture of results, with evidence of competitive effects in some cases, but not others, may be an indication of "aggregation issues, or model specification matters, or simply data errors…at work."[61]

41. Furthermore, consistent with the observations I made in my Initial Declaration, Professor Sweeting notes situations in which the regression approach may generate either false positives (i.e., situations in which the regressions indicate that the presence of competition causes lower prices when in reality no such relationship exists)[62] or false negatives (i.e., situations in which the regressions

[58] Sweeting Review, at 8.

[59] Sweeting Review, at 8-9.

[60] Declaration of John Kwoka, June 28, 2016 ("Kwoka Declaration"), at 8.

[61] Declaration of John Kwoka, June 28, 2016 ("Kwoka Declaration"), at 8.

[62] See Professor Sweeting's example in which competitive providers are adept at getting the business of customers who want fancier (i.e., higher priced) services. This, in turn, leads to a situation in which

indicate that the presence of competition does not lead to lower prices when in fact market power truly does exist).[63] In addition to all of the reasons I have identified for exercising caution in extrapolating policy implications from Professor Rysman's econometric analysis, this assessment delivers yet another reason for the Commission to avoid relying on the outputs from the regressions to derive normative conclusions regarding regulatory policy.

42. Professor Sweeting also observes that the interpretation of the regressions, which purport to show the causal impact of competitors' presence on prices, is stymied by the fact that "many of the contracts observed are likely to have been negotiated some time prior to 2013, when local competition may have been different."[64] As I have indicated, any claim to causality in any observed negative correlation in this instance is lost.

43. Professor Baker too has acknowledged the problem that Professor Rysman's regressions use prices for multi-year contracts which were set prior to 2013 – which eliminates any possibility that variations in these observed prices (established in 2012 or earlier) were caused by observed variations in the extent of competitive presence in 2013.[65] While skirting the theoretical gut punch that this causes for the "causality" argument, Professor Baker first acknowledges, then seeks to dismiss, the statistical consequence of these multi-year contracts. In particular, he argues that the consequence of this (and other) acknowledged statistical sources of bias all work in the direction of making it less likely to

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competitive presence is associated with lower observed prices for the ILEC even if there is no independent effect of competitors' presence on price-reducing rivalry and no "market power" of incumbent firms. Sweeting Review, at 9.

[63] See Professor Sweeting's example in which customers do not seek out (and drive) lower prices even when competitors are present because "many of them are not aware that these competitors exist, or they simply have very strong preferences for sticking with providers that they know." Sweeting Review, at 11-12.

[64] Sweeting Review, at 4.

[65] Declaration of Jonathan B. Baker on the Market Power in the Provision of Dedicated (Special Access) Services, January 22, 2016, at ¶¶90-92.

actually find a negative relationship between price and competition. Professor Sweeting's external review of the regression methodology, however, observes that "[a] priori, one cannot sign the biases that may be present."[66]

44. The economic literature also reinforces the interpretations I offered in my Initial Declaration, and promises to aid the Commission as it seeks to establish an economically sound policy toward BDS. In particular, the negative correlation between price and a variable representing competitive presence (as generated in the Commission's regression model) is not taken in the empirical economic literature as either dispositive evidence of market power or as a clarion call for the establishment of price regulation throughout the market. For example, in a study that evaluates the determinants of disaggregated (route-specific) airline pricing, Professors Goolsbee and Syverson found a negative impact, similar to the negative correlations found in some of the Commission's results, of the presence of low-cost air carriers on the pricing of legacy airlines.[67] Rather than interpreting this result as evidence of significant market power of the incumbent carriers, however, Professors Goolsbee and Syverson point to the result as indicative of the power of potential competition in affecting market pricing. Certainly, the finding did not lead the authors to call for extending price regulation to airline markets in which the low cost carriers had yet to appear, nor for regulating (as contemplated in the FNPRM) all participants in the market, including the very firms that are driving competition.

45. The Commission Staff commendably seeks to eliminate several of the econometric challenges embedded in the initial white paper submitted by Professor Rysman. Among these, the Staff's Attachment 3 examines the effects of the presence of cable companies on ILEC prices in the marketplace. It

[66] Sweeting Review, at 9. See also my discussion above which observes the potential for the approach to fail to identify a relationship when one does exist or to identify a relationship when none exists.

[67] Austan Goolsbee and Chad Syverson, "How Do Incumbents Respond to the Threat of Entry? Evidence from the Major Airlines," *Quarterly Journal of Economics*, Volume 123, November 2008, at 1611-1633.

concludes that as of 2013, potential competition from cable providers did not constrain the pricing of ILECs.

46. This finding elicits at least two responses. First, if taken at face value, this result underscores a substantial incongruity; namely, that the Commission is claiming that cable companies are so insignificant that they cannot affect pricing in the marketplace, while at the same time, it appears to contemplate (and some others propose) subjecting these same supposedly inconsequential market competitors to price regulation. This simply makes no economic sense. If, as Staff's Attachment 3 suggests, cable providers have no impact on market pricing, price reductions on cable companies brought about through regulatory fiat will bring no benefits of reduced market power (because they have none), but will have substantial negative consequences for the pro-competitive expansion of these companies' provision of BDS.[68] And, ironically, such a policy would make even *less* economic sense to the extent that cable providers are bringing pro-competitive benefits to this market as the regulation would choke off the very source of competitive benefits that the Commission seeks to promote.

47. Second, the finding underscores the point that has been made repeatedly in this proceeding regarding the dangers of the Commission relying on stale 2013 data in a market that has been evolving rapidly. Indeed, industry analysts, the Commission, and industry members themselves have all pointed to the pro-competitive effects of cable's entry and growth. For example, as noted in my Initial Declaration, the Vertical Systems Group has stated that "[a]ggressive pricing strategies [by cable BDS providers] have prompted stronger competitive responses from incumbents and competitive providers, which particularly benefits consumers in SMB ([S]mall and Medium Business) segment."[69] Similarly, the

[68] See, for instance, paragraphs 86-94 of my Initial Declaration in which I utilize Comcast's own internal investment model to assess the investment consequences of price regulation on Comcast's investment propensities.

[69] Initial Declaration, at ¶107.

Commission itself states "[t]he great entry success story has been that of cable,"[70] and notes that cable's expansion is forcing ILECs to adopt competitive responses to "maintain[] market share."[71] Verizon and AT&T also readily acknowledge that they respond in rivalrous fashion to cable providers' BDS offerings.

48. The incongruity between the reasoned judgment of industry observers, participants, and the Commission itself, and the alternative interpretation of the Staff's regression output do not inspire confidence in the regression-based foundation for building sound economic policy. Rather, for all the reasons that I (and others) have identified, the results of the Commission's regression analysis simply provide the opposite of a sound foundation upon which to build regulatory policy.

3. Competition in High-Bandwidth BDS

49. Despite its shortcomings, some parties have sought to cling to the framework proposed by Professor Rysman and relied upon by the Commission, and indeed, have even gone so far as to project its relevance beyond the low-bandwidth services to the provision of high-bandwidth BDS, i.e., bandwidths in excess of 50 Mbps. Given the foundational failures of the approach, any extension to the high-bandwidth services is completely unwarranted. All of the problems that I (and others) have identified with the basic approach, data, and interpretation extend to any application involving high-bandwidth service. Indeed, Professor Sweeting noted that he "would be skeptical about trying to read too much into the subset of the coefficients that are significant for this type of service."[72]

50. After considering "additional analysis and evidence," Professor Kwoka concludes that competition in the provision of high-bandwidth services is not sufficient to

[70] FNPRM, at ¶236.

[71] FNPRM, at ¶236.

[72] Sweeting Review, at 8.

ensure that the ILECs charge competitive prices for these services. I am not persuaded that this conclusion is correct.[73] Professor Kwoka says that five pieces of information led to his conclusion.[74] First, citing the declaration of Dr. Zarakas and Dr. Verlinda, he observes that while "noisy," the data indicate that ILEC prices tend to be lower when there are more competitors present in the census block.[75] This association, however, fails to control for any other factors, such as variations in the costs of supplying the relevant census block that may produce exactly this same result. Consequently, taking the data as given, the observed pattern to which Professor Kwoka points cannot be taken as evidence of a *causal* relationship between the observed number of competitors and prices for high-bandwidth BDS.

51. Moreover, the data Professor Kwoka relies upon (reported in Table 1 of his declaration) to draw his inferences are, in themselves, unreliable. Specifically, the count of competitors in the data reported by Dr. Zarakas and Dr. Verlinda (in Tables 2a and 2b in their declaration) that Professor Kwoka relies upon is a snapshot assessment in 2013. Prices, however, are often set as part of multiyear contracts, many of which began prior to 2013. In this case, an observed relationship between 2013 counts of competitive presence and prices—which were largely determined earlier—is spurious. A larger number of competitors in 2013 (observed in the data) simply cannot have driven prices set in, say, 2011.

52. To correct for this intertemporal mismatch, I have reconstructed Table 1 in Professor Kwoka's Declaration ("Kwoka Table 1"),[76] but have made two

[73] It is important to note that even if the conclusion were correct, the target of Professor Kwoka's conclusion is the pricing of ILECs. Professor Kwoka provides virtually no support for the notion that cable companies have market power over the pricing of these services.

[74] Kwoka Declaration, at 9.

[75] Kwoka Declaration, at 9-11, Table 1. See also, Zarakas and Verlinda Declaration, at 4-5, Tables 2a-b.

[76] By construction, given that Kwoka Table 1 is equivalent to Table 2b in the Zarakas and Verlinda Declaration, I have reconstructed both tables.

straightforward corrections. First, rather than reporting one or more competitors (denoted "1+"), two or more competitors ("2+"), etc., as in Kwoka Table 1, I simply report the exact number of competitors that are actually present in each census block. Thus, as shown in Exhibit 1, the columns in my exhibit represent directly the impact of moving from one to two to three competitors, rather than from moving from one or more (1+) to two or more (2+) competitors, etc. Second, and more importantly, I focus on the relationship between the number of competitors (in 2013) and prices from contracts that began in 2013, i.e., prices that might legitimately be driven by the number of competitors in that relevant census block.

53. Exhibit 1 reveals that once these appropriate corrections are made, the pattern that Professor Kwoka, Dr. Zarakas, and Dr. Verlinda observed dissipates. Sometimes prices do not vary with the number of competitors (e.g., {{ }}), sometimes prices decrease when moving from zero to one competitor, but increase when moving from one competitor to two competitors (e.g., {{ }}), and sometimes prices are simply observed to rise with the number of competitors (e.g., {{ }}). Moreover, statistical differences in the medians (and averages) are generally absent. The bottom line is that Kwoka Table 1 provides no indication of market power in the provision of high-bandwidth BDS.

54. Second, Professor Kwoka points to regression results that Dr. Zarakas and Dr. Verlinda perform as evidence of market power in the high-bandwidth categories.[77] But, for reasons that I have enumerated above and in my Initial Declaration, these regressions do not provide a reliable indicator of the presence of market power.

[77] Kwoka Declaration, at 12. See also, Zarakas and Verlinda Declaration, at 6-9, Table 3. Professor Baker also performs modified versions of Professor Rysman's regression analysis and claims that the regression results provide evidence that ILECs exercise market power in high-bandwidth categories. Baker Declaration, at Section III.A, Table 1.

55. Third, Professor Kwoka points toward evidence of price discounting in the market as an indication of "above-competitive pricing."[78] But the propensity for firms to discount in the face of rivalry is a common feature of markets. Whether it is a small office supply store bidding for a new customer, a medium-sized grocery chain, or a larger firm providing BDS, it is routine for firms to respond to rivalrous situations with price discounts. For example, the grocery food chain Giant typically honors any coupon-discounts offered by its competitors.[79] Such discounting, however, is not an indication of significant market power or "above-competitive pricing" in the market for groceries, office supplies, or high-bandwidth BDS.

56. Fourth, Professor Kwoka points to the analysis of Dr. Frentrup who indicates that in 2010, Sprint's RFP process for soliciting bids for its backhaul service yielded {{ }}.[80] However, neither Professor Kwoka nor Dr. Frentrup conducted any economic analysis to show (or even attempt to show) that the {{ }} – they merely noted a correlation.[81] Furthermore, it is important to note that the marketplace has changed dramatically since Sprint's 2010 RFPs. My understanding today is that it is routine for dozens of competitors to vie for the patronage of such RFP processes. For example, according to Comcast, wholesale purchasers employ "pricing tools" to obtain bids from BDS providers and in densely populated areas, those pricing tools typically include 10 to 15 providers with whom Comcast must compete ("generally based on price, but sometimes based on service quality metrics and vendor/network diversity requirements") and even in less densely

[78] Kwoka Declaration, at 12-14.

[79] https://giantfood.com/savings-and-rewards/savings-center/coupon-policy/ (viewed July 15, 2016).

[80] Kwoka Declaration, at 14-15.

[81] In fact, Professor Kwoka stated that a greater number of bidders is "*associated"* with lower prices. (emphasis added). Kwoka Declaration, at 15.

populated areas, Comcast must offer a competitive price in order to win a customer's business because there is always an ILEC and often other competitors with whom Comcast must compete.[82]

57. Finally, Professor Kwoka relies on an assessment that the market for BDS is concentrated. Professor Kwoka acknowledges that the ability of firms to enter (or expand) may offset any market power-inducing effects of concentration. Yet, he is of the opinion that it is "unlikely" that competitive providers can quickly and easily connect to any building in the block where the customer is located due to the existence of "significant entry barriers."[83] This ability to expand, however, is an empirical question. While some, like Professor Kwoka, have argued that expansion costs will deter the pro-competitive stimulus that such an expansion would provide, others (e.g., IRW) argue the opposite. The empirical evidence on the rapid expansion of competitive providers, however, provides comfort that such expansion barriers have not systematically impaired the ability of the market to sustain competitive outcomes.[84]

IV. The Commenters' Evaluation of the Regulatory Framework

58. The third cornerstone of a sound Commission approach to BDS is the design and implementation of a sound regulatory framework – one that is consistent with the economic realities of the marketplace and one that acts to promote the Commission's goals of enhanced competition and investment.

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[82] Declaration of David Allen, June 28, 2016, at ¶¶14-15.

[83] Kwoka Declaration, at 15-16.

[84] It is also worth noting that the Commission itself has observed that data on price "provide more direct evidence of competitive outcomes and the strength of competitive rivalry than do measures of concentration." See Federal Communication Commission. *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services;* Fourteenth Report (25 FCC Rcd. 11407), Released May 20, 2010, at ¶14.

59. In my Declaration, I identified six critical problems with the regulatory proposals embedded in the FNPRM. First, the proposed extension of price cap regulation to all market competitors, including new entrants such as Comcast, is economically indefensible.[85] Specifically, price cap regulation was designed for a monopoly provider, not multiple firms that are actively competing with each other. In this latter case, natural market forces will drive innovation and cost-cutting, and will result in price decreases. Price cap regulation is neither necessary nor beneficial when natural market forces are driving down prices. Second, the imposition of price cap regulation would perversely stifle investment and harm the growth of new competition in the provision of BDS.[86] The economic incentive for such recused investments is easy to envision. Simply put, when prospective new entrants face entry and expansion decisions, the effects of regulation-dictated price reductions (as well as the uncertainties and compliance costs associated with regulation) can only act to reduce investment and expansion incentives. As I showed in my Initial Declaration, Comcast's own investment models provide powerful evidence that price reductions dictated by regulation will substantially thwart the firm's natural expansion tendencies. Third, the imposition of price cap regulation dulls incentives for quality.[87] Fourth, the proposed regulations fail to recognize the risks of extending regulation unnecessarily.[88] Fifth, the Commission's proposal would impose substantial administrative costs that will be borne by consumers, firms, and taxpayers.[89] In particular, a more geographically granular regulatory structure that is re-assessed every three years (as proposed) will impose tremendous transactions costs on firms that seek to write contracts to compete across different geographic regions. It will also impose tremendous

[85] See Initial Declaration, at ¶¶13, 80-85.

[86] See Initial Declaration, at ¶¶86-94.

[87] See Initial Declaration, at ¶¶95-96.

[88] See Initial Declaration, at ¶97.

[89] See Initial Declaration, at ¶¶98-101.

compliance costs on firms subject to the newly expanded regulatory regime and substantial administrative costs on the Commission. And finally, as I pointed out in my Initial Declaration, there are several ways in which the contemplated regulatory structure creates perverse incentives for firm behavior.[90]

60. The initial filings of a variety of commenters on June 28, 2016 provide further support for my conclusions. Numerous parties, including those that support price cap regulations, are in agreement with my conclusion that new entrants such as Comcast do not possess market power and that there is no economic basis to impose price cap regulations on them. Furthermore, numerous parties have noted that imposing such regulations on new entrants would be counterproductive and harmful to BDS consumers. For instance, Professor Schwartz and Dr. Mini conclude that "[t]here are powerful public policy reasons to refrain from regulating entrants, notably to provide incentives to invest and innovate, and not impose regulation once they have done so."[91] They further note that the growing extent of competition in the provision of BDS reduces the benefits of extending regulation while "[o]n the other side of the ledger, the costs would be substantial: financial disincentives for further expansion, and the burdens of complying with likely complex regulation."[92]

61. Birch, Earthlink, and Level 3, all parties that support price cap regulation, explicitly commented that new entrants should not be subject to the proposed regulations. According to those CLECs, "incumbent LECs are clearly the leading competitors in all relevant Business Data Services markets" and only those leading competitors should be subject to regulation.[93] They also noted: "As the

[90] See Initial Declaration, at ¶102.

[91] Dr. Marius Schwartz and Dr. Federico Mini, "Economic Basis for Not Regulating Competitive Providers of Business Data Services," White paper, June 24, 2016 ("Schwartz and Mini Declaration"), at 4.

[92] Schwartz and Mini Declaration, at 4.

[93] Joint CLEC Comments, at 58.

Commission has long held, it is unnecessary and even potentially harmful to apply *ex ante* regulation to competitors without market power" because they have "no ability to sustain prices above the level charged by the leading competitor in the market."[94]

62. The Commission Staff's analysis (in Attachment 3) is consistent with the observation that (new entrant) cable companies such as Comcast do not possess market power. As described above, the Staff extended Professor Rysman's analyses to evaluate the competitive impact of cable companies on ILEC prices and concluded that "potential cable competition has relatively minor effects on ILEC prices and generally did not appear to be a significant source of competition in 2013."[95] The Staff also wrote: "Overall, we conclude that the inclusion of potential cable competition is not necessary to properly model these markets at this time. As cable competition grows it may become an important component but in 2013, it was not."[96] To the extent that the Commission finds the regression methodology sound and these interpretations correct, the Staff's analysis supports the hypothesis that cable companies such as Comcast do not possess market power in the BDS market and there is no economically justified basis for regulating Comcast and other cable companies.

63. More generally, as noted by Professor Sweeting, even if certain BDS providers possessed market power in 2013, their "market power may be too limited to rationalize regulation."[97] Indeed, implementing the contemplated regulatory scheme based on the belief that a fraction of BDS providers *may* have possessed a *limited* amount of market power in 2013 hardly justifies the inefficiencies, high

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[94] Joint CLEC Comments, at 59.

[95] "Competitive Effect of Cable Network Infrastructure," Federal Communications Commission Staff, June 28, 2016 ("FCC Attachment 3"), at 1.

[96] FCC Attachment 3, at 6.

[97] Sweeting Review, at 10.

costs, and distorted incentives that the regulation would impose on BDS providers, consumers, and regulators (and taxpayers).

64. Numerous parties are also in agreement with my conclusion that price cap regulations would stifle investment and competition. Recall in particular that in my Initial Declaration, I used Comcast's own internal financial models to analyze the impact of regulation-induced price reductions on its investment tendencies moving forward. I found that "the consequence of price regulation would be a significant reduction in the competitive investment, supply, and innovation in the market."[98] Cox's comments reinforce this point, stating that forced price reductions as low as 5 percent "would cause some projects that today meet Cox's hurdle rate to have prospective returns below that rate."[99] Cox also commented that "competition is already driving Ethernet prices down so precipitously that Cox is finding it harder to justify the costs of new fiber deployment"[100] and that its BDS investments will be adversely affected by the "pricing uncertainty introduced by this proceeding."[101]

65. Charter has also observed that "price-regulating cable-provided BDS would discourage the investment the Commission seeks to promote."[102] According to Charter, its "buildout decisions are based {{

}}"[103] Charter also noted that "even if the Commission's price regulation were to allow cable providers to offer BDS at rates with sufficient returns," if

[98] Initial Declaration, at ¶94.

[99] Cox Comments, at 22.

[100] Cox Comments, at 2.

[101] Cox Comments, at 22.

[102] Charter Comments, at 8.

[103] Charter Comments, at 10.

such regulation is ever put into effect, the uncertainty associated with future rate regulations and the costs of compliance would likely lead Charter to look for "more productive uses of investment dollars."[104]

66. In a similar vein, Lightower commented that "[b]efore undertaking new construction, Lightower performs a detailed analysis of the potential payback period and return on investment" and that it "bid[s] on a service and incur[s] the capital cost only if the expected return on investment meets or exceeds a threshold."[105] According to Lightower, "[i]n many cases, the expected return [on investment] just barely meets the threshold" and approximately {{ }} percent of BDS that it currently provides required a material amount of special construction to connect the customer.[106]

67. According to ITTA, "[m]any of the *FNPRM*'s proposals, if adopted, will force ITTA's members to slam the brakes on their continued investment in broadband facilities and services, especially in rural communities."[107] ITTA also noted that if the regulatory proposals in the FNPRM were to be adopted, rather than "removing barriers to the transition to the networks of tomorrow – an avowed goal of the FNPRM," those regulations would "threaten to freeze providers in the technology and deployment of the past."[108]

68. In their white paper, Professor Schwartz and Dr. Mini note that a consistent theme that emerged from their interviews with cable companies is that investing in new fiber connections to offer BDS is risky and "their internal rate of return threshold for undertaking such investment is quite high and/or the payback period must be

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[104] Charter Comments, at 10-11.

[105] Comments of Lightower Fiber Networks I, LLC, Lightower Fiber Networks II, LLC, and Fiber Technologies Networks, LLC, June 28, 2016 ("Lightower Comments"), at 21.

[106] Lightower Comments, at 18, 21.

[107] ITTA Comments, at 2.

[108] ITTA Comments, at 2.

quite short."[109] As such, "[r]ate regulation would jeopardize such investment."[110] Furthermore, according to Professor Schwartz and Dr. Mini, "investment would be scaled back in higher-cost or greater-risk locations" such as "rural areas where there are limited revenue opportunities" and "[a]s a result, those areas with poor fiber BDS coverage and limited competition would be least likely to benefit from future investment."[111] In addition, consistent with my observation that price caps would jeopardize Comcast's pro-builds,[112] Professor Schwartz and Dr. Mini note that such pro-builds will be less likely to occur if cable companies become subject to price caps.[113]

69. Touching on the quality-altering aspects of regulation, ACA observed: "[A]n entrant may incur higher costs than the incumbent because it offers higher quality services … providing value and another option to consumers and disciplining the incumbent's prices. Rate regulation of non-incumbents would undermine these benefits."[114] Similarly, ACA notes that "[s]maller providers, especially those operating only in rural areas, are more capital constrained (either lacking access to or having a higher cost of capital) and have less room for error in making investment decisions," and therefore, "[s]hould payback periods be lengthened, such as because of rate regulation, smaller providers would be more reluctant to invest to expand or upgrade facilities supporting BDS, especially because proceeding may harm their credit rating or result in the breach of lending covenants."[115]

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[109] Schwartz and Mini Declaration, at 15.

[110] Schwartz and Mini Declaration, at 15.

[111] Schwartz and Mini Declaration, at 15; ACA Comments, at 39-40.

[112] See Initial Declaration, at ¶¶91-93.

[113] Schwartz and Mini Declaration, at 15.

[114] ACA Comments, at 23-24.

[115] ACA Comments, at 33-34.

70. It is also worth noting that some parties who favor the widening of price regulation at rates that are (possibly) dramatically lower than today are noticeably silent on the potential for regulation to stifle investment and competition.[116] Their silence, however, cannot be taken as an indication that no investment impacts will occur. As my Initial Declaration indicated, expanded imposition of price regulation will create substantial reductions in the propensity of new entrants to invest and compete in the BDS market.

71. Finally, because the Commission has received so many comments on regulatory proposals embedded in its FNPRM, it will be very easy for the Commission to "lose the forest for the trees." The big test in the case at hand is whether the proposed policy advances the Telecommunications Act's call for policies that advance competition. Such advances are universally admired by economists. In the case at hand, the price regulation that the FNPRM envisions would have numerous economic effects that I and others in this proceeding have outlined. But adopting the FNPRM's price regulation would not *have the economic effect of* advancing competition. Importantly, this is true even if one were to accept *arguendo* that the assessment of market power conducted by the Commission were correct.[117] In particular, the price regulation features of the proposed regulation will certainly diminish entry and expansion incentives by new competitors, effectively preserving whatever level of market power that currently exists (if it exists) in the provision of BDS. Thus, presumably in the name of protecting consumers (who are already benefiting from rapid price declines and expanding quality), the Commission is contemplating imposing and expanding price cap regulation throughout this marketplace. But such policy would move the

[116] See, e.g., Baker Declaration, Kwoka Declaration, and Declaration of David Sappington and William Zarakas, June 28, 2016.

[117] For reasons I provided throughout my Initial Declaration, the Commission's methodology and execution of its tests for market power in the provision of BDS are unreliable.

Commission's policy in the wrong direction – *opposite* to the pro-competitive direction called for in the Telecommunications Act.

V. Assessing Competition Afresh

72. In my Initial Declaration, I offered an approach to assessing competition in the BDS marketplace that relies less on structural characteristics of the marketplace and more on observable behaviors in the marketplace.[118] The initial round of comments confirms the merits of a more behavioral approach. Specifically, parties are mired in debates regarding whether the "appropriate" number of competitors for "competition" is at least 2 or at least 4.[119] The fact is, however, that neither economic theory nor a review of history can confidently answer the question of whether such a magic number exists.[120] In the present case, this challenge is made all the more daunting by auxiliary debates about the geographic breadth of the area within which firms compete, the bandwidth capacities that may constitute separate product markets for BDS and the rapidly evolving nature of the market itself. In this caldron, any attempt by the Commission to define a bright-line for competition based on an "over-under test" for a number of competitors is likely to be fraught with errors.[121]

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[118] Initial Declaration, Section IV.

[119] For example, Verizon and TDS Metrocom claim that the "appropriate" number is 4, Sprint (and its economist, Professor Kwoka) claim that it is between 3 and 5, and the ITTA and AT&T (and its economists) claim that it is 2. See Comments of Verizon, June 28, 2016 ("Verizon Comments"), at 3; Comments of TDS Metrocom, LLC, June 28, 2016 ("TDS Comments"), at 11; Sprint Comments, at iii–iv; Kwoka Declaration, at ¶47; Comments of AT&T, Inc., June 28, 2016 ("AT&T Comments"), at 6; IRW Second White Paper, at 3-4; ITTA Comments, at 2.

[120] Professor Kwoka acknowledges this, if only implicitly, noting that in the Cournot model price and the number of competitors is inversely related while the Bertrand model "does not have such clear implications." Kwoka Declaration, at 4.

[121] On this point, Professor Kwoka agrees, stating that "[n]one of these theories yields a bright-line value for the number of effective competitors that generally suffices for a competitive equilibrium." Kwoka Declaration, at 5.

73. The alternative, and entirely appealing, approach to assessing competition is to evaluate the performance of the market.[122] If, as would be the case under monopolistic supply or widespread market failure, prices were rising, providers were withholding output, investment was lagging, and innovation was suppressed, then some form of market intervention may be warranted. In the case at hand, however, an evaluation of these market performance metrics paints an encouraging picture.

74. Indeed, parties from virtually every perspective agree that the marketplace is, of its own volition, evolving very rapidly toward systematic competition and in ways that are consistent with promoting consumer welfare. For example, TDS Metrocom, an advocate of strengthening regulation in the market, readily acknowledges that "the market is rapidly moving toward higher bandwidths at a lower cost."[123] Professor Sweeting, an external reviewer for the Commission, noted that it is likely that the BDS market has experienced significant changes since 2013 and "[i]t is therefore possible that relationships observed in the 2013 data may hold more or less strongly today."[124] And many other parties too have acknowledged the rapid, pro-competitive trends in this marketplace.[125]

75. Prices are falling quite rapidly, output is exploding, consumers are successfully able to purchase higher quality services (measured in bandwidth), and investment, which supports the future viability of the market, is robust. The ultimate test in this market for the merits of regulation – performance in the marketplace – provides a very encouraging picture. In this regard, it is worth emphasizing the Commission's earlier standard for the presence of "effective competition": "competition among service providers in a market that benefits consumers by

[122] See Initial Declaration, Section IV.

[123] TDS Metrocom Comments, at 12.

[124] Sweeting Review, at 4.

[125] See, in particular, Section II above.

expanding service offerings, promoting development of innovative technology, and lowering prices."[126] This standard is both rooted in sound economics, but also provides clear guideposts for BDS policy for 2017 and beyond.[127]

76. It is also important to note that the FNPRM speaks of the regression results generated by Professors Rysman and Baker as providing "direct evidence of market power,"[128] yet even if the results of these analyses were valid (and they are not for reasons described in my Initial Declaration and above), they are at best *indirect* measures, as would be any competitive filter that relies upon a structural count of the number of firms operating within a particular geographic area. As the Commission itself has noted, "market performance metrics provide *more direct evidence* of competitive outcomes and the strength of competitive rivalry than market structure factors."[129]

77. It would be a significant misstep for the Commission in this case to rely upon flawed *indirect* evidence, rather that unequivocal *direct* evidence of competitive behavior in the marketplace.[130] This direct evidence is provided by the undisputed facts that BDS prices are lower than ever before (and falling), output is expanding, consumers are enjoying higher quality products, and investment is

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[126] Federal Communications Commission. (1995b). Market Entry and Regulation of Foreign-Affiliated Entities, Report and Order (11 FCC Rcd. 3873), at 3875.

[127] For a more complete, and complementary discussion of the evolution of the concept of "effective competition" see Amanda B. Delp and John W. Mayo "The Evolution of 'Competition': Lessons for 21st Century Telecommunications Policy," Georgetown University working paper, 2016. Available at http://cbpp.georgetown.edu/sites/cbpp.georgetown.edu/files/Delp-Mayo-Effective-Competition.pdf (accessed April 27, 2016).

[128] FNPRM, at ¶237.

[129] See Federal Communication Commission, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fifteenth Report* (25 FCC Rcd. 11407), Released June 27, 2011, ¶10 (emphasis added).

[130] The FNPRM does examine the relationship of ILEC prices in price cap regions with the regulatory cap. This examination of prices might be thought of as "direct" but, as pointed out by IRW, observations of prices near the regulatory price cap cannot be taken as evidence of significant market power absent considerable confidence that the regulatory price cap is above the competitive level. See IRW Second White Paper, at 21-22.

robust.[131] Even advocates for a more comprehensive regulatory structure in this market have noted the merits of relying on this truly direct evidence. For example, Birch, Earthlink, and Level 3 argue that the Commission should "adopt a framework for identifying non-competitive markets that *is rooted in actual market conditions* but that is also administratively simple."[132]

VI. Conclusion

78. BDS constitutes a substantial and rapidly growing set of inputs into the vitality of the American economy. The BDS provided by ILECs, CLECs, and cable companies, ranging from those that enable next-generation wireless services to those that enable the day-to-day communications operations that fuel business productivity, are crucial for the nation's economic growth. Against this backdrop, it makes sense for the Commission to focus its attention on the provision of BDS. That focus appropriately seeks to discern whether the provision of BDS is subject to competition. If so, the Commission rightly wishes to remove unnecessary regulations; and, if not, to provide "tailored rules" to protect consumers.

79. From this sensible point of departure, the Commission's FNPRM and some of the subsequent submissions by parties to this proceeding take us on a contorted journey that threatens to leave regulatory oversight of BDS far off the path of sound economic policymaking. The economic facts are unequivocal: prices today are lower for BDS than ever before. Output and the growth of output are higher than ever before. Consumers (in this case, firms) are transitioning quickly to higher quality BDS (here, greater bandwidth). These higher quality services are not coming to the market as a consequence of regulatory fiat, but rather freely by firms which are, in self-interested fashion, seeking to secure or retain customer patronage. Investment, the lifeblood of the competitive future of BDS, is robust.

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[131] See, especially the discussion in my Initial Declaration (Section IV) and in Section II above.

[132] Joint CLEC Comments, at 6 (emphasis added).

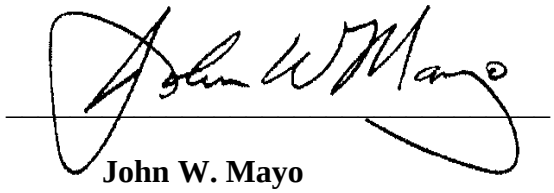
Together, these economic metrics indicate that market forces are creating more benefits for consumers than ever before. The economic *sine qua non* of regulation, market failure, is difficult to identify in this market.

80. Ironically, at this moment of great promise, the Commission appears on the cusp of not only subjecting incumbent providers to a new and complex regulatory mechanism, but also extending the regulatory net to include new entrants. There is, however, no economic uncertainty – none – that these new entrants are the catalysts to the competitive benefits being observed in the market. And while considerable debate has arisen in this proceeding over whether and to what extent the competitive presence of these firms in a particular geographic area acts to drive lower prices, there should be no debate about the regulatory "remedy." Spreading price regulation to the very firms that are providing the full measure of competitive stimulus observed in this market would, quite simply put, be anti-competitive. That is, while the Commission seeks more competition and more competitive pressures, the spread of price caps to all carriers will simply prolong any existing lack of competitive pressures in the market. The Commission will have created, not eliminated, barriers to entry and expansion.

81. The Commission should judiciously pause to re-order what has effectively emerged as a "ready-fire-aim" approach to regulatory oversight of BDS. Sound regulatory oversight of BDS that complements, rather than retards, the market's push toward competition is possible, but the path laid out by the Commission must be re-configured.

Date:

August 9, 2016



John W. Mayo

EXHIBIT 1

MEDIAN ILEC CIRCUIT AVERAGE MRC BY CARRIER AND BANDWIDTH
BY NUMBER OF COMPETITIVE PROVIDERS IN CIRCUIT'S CENSUS BLOCK
CONTRACT START YEAR IS 2013

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